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The filter factor

Why they should be in
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How to take stunning shots
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5

**under
£500**
Our round-up
of the top five
entry-level CSCs

Maiden flight

Just what is it like to
fly a drone?



Technique


The magic of mist

How to see the
wood for the trees



The UK's most comprehensive listings

Wondering about the latest gear? Find out how we rate 536 cameras and lenses



TRIPOD SPECIFICATION

MODEL	MAX. LOAD	WEIGHT	SECTIONS	CONSTRUCTION	MAX. HEIGHT	CLOSED LENGTH	SRP	OFFER PRICE
NT-6234AK	10Kg	1.29Kg	4	Aluminium	1384mm	353mm	£429.99	£103.99
NT-6235AK	10Kg	1.18Kg	5	Aluminium	1384mm	318mm	£189.99	£ 97.99
NT-6264AK	15Kg	1.75Kg	4	Aluminium	1500mm	415mm	£169.99	£135.99
NT-6264CK	15Kg	1.49Kg	4	Carbon Fibre	1500mm	415mm	£249.99	£199.99
NT-6294AK	20Kg	2.17Kg	4	Aluminium	1660mm	450mm	£199.99	£159.99
NT-6294CK	20Kg	1.85Kg	4	Carbon Fibre	1660mm	450mm	£299.99	£229.99

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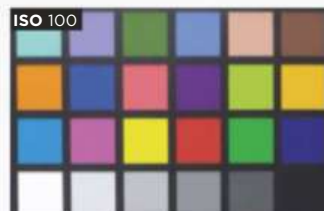
Our comprehensive camera and lens listings

98 7 essentials

OK, not exactly essential – this is the priciest gear around

Tests you can trust

To ensure the camera you buy doesn't disappoint, every camera that passes through the hands of What Digital Camera's technical team is put through a series of tests. From high-spec DSLRs through to entry-level compacts, they are subjected to a series of rigorous tests in our lab, with results analysed by the very best industry software. This makes our reviews the most authoritative in the UK. We test for colour – different sensors and camera image processors can interpret colour differently. We then get down to the nitty-gritty of resolution, with our lab tests showing us exactly how much detail each camera can resolve. Then we look at Image Noise. Finally, we get out and shoot with every camera and lens in real-world conditions just as you will, to find out how they perform.



COLOUR

Subjecting each camera to our colour chart test reveals any variation and differences in colour between Raw and JPEG file formats.



RESOLUTION

Our resolution chart reveals exactly how much detail a sensor can resolve, measured in lines per picture height, abbreviated to l/ph.



NOISE

The diorama is used to ascertain how image noise is handled through an ISO range. Some cameras produce cleaner results than others.

Wildlife Photographer of the Year

This magically ethereal image of great egrets, by Hungary's Zsolt Kudich, is just one finalist from this year's Wildlife Photographer of the Year Competition. The exhibition opens at the Natural History Museum in London on 16 October. Don't miss it! Visit www.nhm.ac.uk/wpy



1



2



3



5



4



1 Eyefi Mobi Pro 16GB card

£50 www.eyefi.com

Initially only available in a 32GB capacity, Eyefi has announced that its Mobi Pro cloud-connected Wi-fi card is now available in a 16GB capacity. It comes with a year's free membership to the Eyefi Cloud.

2 Epson SC-P400 printer

£TBC www.epson.co.uk

The SC-P400 is the latest A3+ pro-photo printer from Epson. It uses a seven-colour UltraChrome HiGloss two ink-set, supports Wi-fi printing and accepts a wide range of media, including fine art papers.

3 Kodak PixPro SP360-4K

£TBC www.kodak.com

The SP360-4K camera captures a 360° field of view in multiple directions via its dome-shaped lens. It features 10 different viewing modes, it can record time-lapse footage and comes with a wide range of attachments including a waterproof housing, adhesive suction mount and remote control.

4 Tamron 35mm f/1.8

£TBC www.intro2020.co.uk

The SP 35mm f/1.8 Di VC USD will initially be available in Canon and Nikon mounts and is compatible with full-frame and APS-C DSLRs.

5 Olympus OM-D E-M10 II

£549 (BODY ONLY) www.olympus.co.uk

Olympus has revamped the OM-D E-M10 in the form of the OM-D E-M10 Mark II, adding five-axis image stabilisation, chunkier dials and a redesigned control layout in a more classically styled body. Aimed at enthusiasts, the 16.1MP E-M10 Mark II incorporates a higher 2.36-million-dot-resolution OLED EVF and the frame rate has been increased to 8.5fps. There's also a 3in LCD touchscreen, a built-in flash, 14 art filters, an 81-area AF system and built-in Wi-fi. It'll be made in silver and black but we're still awaiting confirmation of when it might be available to buy in the UK.

6



© DAVID TIPLING

6 Wildlife winners

£25 www.bwpawards.org

The winners of the British Wildlife Photography Awards 2015 have been announced. We highly recommend buying the book to take a look at the incredible images that were selected by the judges.

7 Canon EF 35mm f/1.4

£1799 www.canon.co.uk

It's been rumoured for a while and the Canon EF 35mm f/1.4L II USM has finally landed. Designed for photojournalists, sports and wedding photographers alike, it comes with an extortionate price tag. Best start saving!

7



8



A



9



© LUKE AUSTIN

8 Panasonic Lumix GH4R

£1199 (BODY ONLY) www.panasonic.co.uk

Panasonic has unveiled a revamped version of the Lumix GH4 called the Lumix GH4R. It boasts improved video functions including unlimited 4K recording at 24fps, plus V-Log L that increases the dynamic range of footage.

9 Landscape champions

internationallandscapephotographer.com

There were some truly breathtaking images submitted to the International Landscape Photographer of the Year 2015. Visit the website link above where you'll be able to view the winners and download a free e-book.

A Infrared feature

On page 52, in *WDC* September, some incorrect details regarding ACS crept in. To clarify, ACS and Protech both offer 590nm, 665nm, 720nm and 830nm filters. ACS also offers Full Spectrum filters. www.protechrepairs.co.uk
www.advancedcameraservices.co.uk

B Sony PlayMemories

Referring to our Mobile Wi-fi apps guide (*WDC* October), Sony PlayMemories Mobile does have GPS tagging. You'll need to update the 'Smart Remote Control Embedded' app on your camera, to the full 'Smart Remote Control' app, free within the Sony PlayMemories Store, to get advanced functionality. www.sony.co.uk

B



OnePlus 2

ONEPLUS.NET/UK/2 £289

With the OnePlus One last year, the virtually unknown company created a desirable smartphone that caused such a frenzy you had to get an invite just to be able to buy the thing.

A little over a year later and the Chinese company is back, with a much improved device that is still a pain to actually buy.



The OnePlus 2 is a flagship device, a '2016 flagship killer' if you believe the brand's hype-inducing marketing, but at a thoroughly mid-range price of £289. (There will be a cheaper, less powerful £239 model available later in the year.) There's a 1080p display, a fast fingerprint scanner to rival TouchID on the iPhone,

Qualcomm's top of the line 64-bit 810 processor and a whopping 4GB of RAM.

But it's the camera where OnePlus is really trying to shine. The 13MP sensor isn't crafted by Sony,

like most phones on the market, but by Omnivision and for the most part it impresses. A laser AF system makes focusing snappy, while daylight snaps come out full of detail and accurate colour representation.

The addition of optical image stabilisation helps night-time shots no end. In low-light conditions the phone will drop its shutter speed down to 1/10sec. Without OIS it's hard to get sharp images with an exposure time this long, but it's pretty easy with the OnePlus 2.

You also get a near stock version of Android, with only a few minor alterations in the form of Oxygen OS 2 and the new USB-C port replacing the standard MicroUSB. This is a reversible connector that has been heralded as the port that could charge all our devices. It's a nice feature, but condemns our huge pile of microUSB cables to the trash heap. **MP**



Windows 10

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If you use a Windows machine, you should download Microsoft's latest version of Windows. It's free for all Windows 7 & 8 users if you install it within a year, and looks to right all the wrongs made with Windows 8.

The iconic Start Menu has a couple of new tricks. The handy live tiles that made up most of Windows 8 can now be added directly to the Start screen, so you don't have to go full screen to get the most from them.

Cortana, a feature from Windows Phone OS, is another new addition. The helpful personal assistant is always listening and combines system-wide and online search with a notebook for setting reminders, plus weather and news alerts.

The focus of Windows 10 is the desktop and laptop; tablets don't get as much of an overhaul. But as the operating system is designed to work seamlessly on all devices, even phones and the Xbox One later in the year, apps should theoretically work just as well on your PC as on your tablet.

Microsoft says Windows 10 will be the final version of the OS; we say it's possibly the best yet. **MP**

Samsung UE55JS9000

WWW.SAMSUNG.CO.UK FROM £4,000

With 4K content becoming more and more available, either through streaming services or the upcoming UHD Blu-ray standard, there's never been a better time to upgrade your television to something packing a lot more pixels.

Costing £4,000, this 65in set isn't for everyone, but the stunning curved screen and

support for HDR video make it a winning choice.

High Dynamic Range ensures colours look intense and vivid, yet still natural. We compared it to watching regular, non-HDR content and the difference was clear to see.

Smart TV functions come from Samsung's own Tizen platform and there's



surprisingly fantastic 3D support thrown into the mix too. The included remote is another winner, ditching that fiddly touchpad and streamlining the number of buttons. **MP**

BOOK REVIEWS

UNFORGOTTEN NEW YORK

by David-Brun Lambert, John Short and David Tanguy

PRESTEL £29.99

The New York of yesteryear is perhaps unrecognisable when set against its current gentrified version, but there are plenty of visual records to help keep the history of this sprawling dangerous monster of the past alive.



Unforgotten New York is a beautifully produced volume, but is almost painful to read. So much of New York's important, if at times sleazy atmosphere has been demolished and replaced with generic cafes and

organic fruit and veg shops. New York is not the only city to be stripped of its character, but this book reminds us that just beneath the surface of any major city, there will always be something vital and inspiring. **OA**

PEAK DISTRICT

Through The Lens by John Grant

APERTURE MEDIA

£23.95

At some point in their life, every landscape photographer will make their way to the Peak District. It's not surprising when you consider how diverse the area is. There are countless opportunities to create engaging and beautiful images, but it can be easy



to become a little overwhelmed with ideas, particularly if you are only there for a short time. Thankfully, John Grant has created an exhaustive guide, meaning you can plan your trip well in advance. This volume is chock-

full of photos, maps, advice, and even finds space for details on wheelchair access for each location. This is a great book and a must if you plan to visit the Peak District. Visit: www.jamesgphotography.co.uk to purchase a copy. **OA**

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THINGS TO TRY THIS MONTH



Try this... Find the background first

Usually, photographers consider their main subject first, and look for a context in which to place it afterwards. It's a perfectly sensible and time-honoured approach to making pictures. However, successful images can be the result if you turn that idea on its head and look for the background first. In the case of this photograph by Martin Phelps, the backdrop of a turquoise wooden hut is visually appealing, but would be somewhat bland as the sole subject of a photograph. Introduce a dog (or, indeed, a human) into the mix, however, and the scene is brought to life.

TOP TIP

Go out on a recce for backgrounds, and make visual notes using your camera or smartphone. Consider how the light will fall depending on the time of day. The sharp diagonal shaft of light in this image brings dynamism to the scene.

Nikon D3, 35mm f/2, 1/2500sec @ f/2.8, ISO 200
www.martinphelps.com



Try this... Capture a catchlight

Make natural light your friend when shooting portraits. It's surprisingly easy to manipulate, and with a little work you can end up with both an even wash of light and catchlights in the eyes, as this striking portrait by travel photographer David Lazar demonstrates. By moving your subject into a shaded area or under a canopy, and making sure there's no direct sunlight anywhere in the frame, any harsh highlights that would otherwise blow out are eliminated. There should be enough light bouncing around to create a flattering catchlight in the eyes, but you can always help things along by using a small, portable reflector.

TOP TIP

If you find that photographing people is a little daunting, then prepare for your shoot by studying simple, flattering poses. If you are sure what you want from the picture, your subject will pick up on it and relax, resulting in a stronger image.

Nikon D700, 24-85mm at 50mm,

1/30sec @ f/3.5, ISO 400

www.davidlazarphoto.com

Try this... Look for lead-in lines

There are numerous compositional devices you can use to strengthen the impact of your landscape pictures, and composing using lead-in lines is a surefire way of ensuring your viewer's eye travels through the scene in the way you would like it to. In the case of this photograph by Chris Herring, such lines are almost the sole element of the image. He has used a long exposure to flatten out the sea and clouds, so our attention is immediately drawn to the rusting groynes and nothing else. It has also served to separate the broken section at the end of the groyne, which gives an already impressive picture an additional element of interest.

TOP TIP

Choose your viewpoint carefully. With landscape photography, the temptation is often to get low to the ground to maximise the impact of the foreground. With this image, however, Chris has chosen a raised viewpoint, which has allowed him to separate the diagonals perfectly.

Canon EOS 5D Mark II, 17-40mm, 201secs @ f/4, ISO 200
www.theuklandscape.com







Try this... Use a shorter shutter speed

Long-exposure filters have taken the landscape world by storm, and the picture on the previous page shows how effective they can be. But sometimes only a short shutter speed will do, as Marino Reljica Kostic has proved here. Angry seas such as these cry out to be frozen in a fraction of a second, leaving the viewer in no doubt as to their power and danger, and they prove why the lighthouse on the horizon is such a necessity. The foaming white water sparkles in the setting sun, which gives the image depth and dimension.

TOP TIP

The obvious way to nail a picture such as this is to take a lot of them, but careful timing should still play an important role. Study the waves to get an idea of their patterns and when they're about to crash, then release the shutter. The wave breaking the horizon helps make this shot a success.

Olympus E-420, 70-300mm, 1/250sec @ f/5, ISO 100

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Filters

Filters are an essential component in any photographer's kit bag, and are invaluable for getting your images right in-camera. We take a look at the main types of filter and explore what they have to offer...

WORDS • AUDLEY JARVIS

Given the advances in post-processing software in recent years, along with the proliferation of Instagram-style digital filter effects, you might be forgiven for assuming that traditional camera filters have had their day. Not at all. Any professional photographer will tell you that filters remain a vital photographic tool well worth reserving a space for in your kit bag.

The main appeal of filters is that they can be called upon in a wide range of situations in order to bring the very best out of the scene you want to capture. For example, ND grads can be used to preserve the colourful highlights in a dramatic sunset, whereas an unfiltered exposure might blow them out. Likewise, a decent polariser can be used to dramatically boost saturation and contrast when shooting outdoors in bright

sunshine, adding an extra layer of punch and vitality to your images.

Better still, some filters also open the door to a number of creative photographic techniques that are extremely difficult – sometimes even impossible – to replicate using Photoshop or other post-processing applications. For example, high-strength neutral density filters allow you to use much slower shutter speeds in bright conditions, enabling you to produce dreamy effects from moving water and clouds.

The main issue for anyone who wants to experiment with filters is the sheer number of products on the market, many of which will only be of benefit in very specific conditions. That said, there are also a number of filters that most enthusiasts – particularly landscape photographers – consider to be essential. Over the next few pages,

we'll look at what these are and explore the benefits they can bring to your photography, as well as recommending some of the best examples currently on the market.

Circular or square?

Filters come in two shapes – circular and square. Circular filters screw directly onto the end of your lens, while square filters require a bespoke filter holder and lens adaptor. Which type is right for you will generally depend on the type of filter you want to use, and how many you think you want to use simultaneously. Generally speaking, most photographers tend to prefer circular UV filters, polarisers and ND filters, but square grad filters, as they enable more precise control over which part of the frame the filter affects.

Many landscape photographers who regularly use ND and ND

grads in combination tend to stick with square filter systems, primarily because they are quicker to set up and dismantle in between shots.

Because lenses come in many different sizes, circular filters also come in a variety of sizes – from the small 52mm filters that fit many standard 18-55mm kit lenses to the wider 77mm filters designed for professional-grade f/2.8 zooms. Obviously, you'll need to match the correct filter size to the diameter of your lens. If you're not sure what the diameter of your lens is, you can often find it embossed on the inside of the lens cap the lens originally came supplied with. Failing this, you should be able to find it on the manufacturer's website.

Of course, if you've built up a collection of lenses, there's a very good chance not all of them will be the same diameter. In this case, you'll either need to buy separate filters for each lens, which can quickly get expensive, or invest in a step-up adaptor ring that enables you to attach a 77mm circular filter to, say, a 72mm lens. Conversely, a step-down ring will allow you to attach a smaller 72mm filter to a 77mm lens. While both approaches will save you money, you do run an increased risk of vignetting – especially when using a step-down adaptor or an ultra-wideangle lens. Likewise, while circular filters are threaded on both sides so that they can be stacked one filter on top of another, combining too many at once will often result in vignetting.

When choosing a circular filter, a number of factors have an impact on price. Glass filters are generally more expensive than those made of resin, and are more susceptible to breakage if dropped. Look out for image-enhancing coatings. While most filters will have some type of coating, the number of layers applied, the quality of these coatings and process used to apply them will have a big impact on quality. Likewise, the thickness or 'height' of the filter is also worth considering, as this will have a direct impact on the likelihood of vignetting (ie whether the camera sensor will be able to 'see' the edges of the filter, resulting in dark corners in the frame).

If you own a range of lenses with different filter diameters and have a keen interest in landscape work, you will almost certainly find it more



© AUDLEY JARVIS

This image was taken at Trebarwith Strand, Cornwall, while the sun was low in the sky, behind the large rock to the right of the frame. A Lee Big Stopper was used to achieve a 30-second exposure in order to smooth out the sea. In reality, there was actually quite a big swell rolling in, with 5ft-high waves crashing on to the outer rocks.
Nikon D750, 24-70mm at 24mm, 30 seconds @ f/5.6, ISO 200

practical and cost-effective to invest in a square filter system. These are built around square or rectangular pieces of glass or resin that slot into a bespoke filter holder that attaches to the lens via an adaptor ring. These adaptor rings are available in all standard lens diameters and are significantly cheaper to buy than individual circular filters.

There are a number of square filter systems on the market, the most popular of which are those manufactured by Cokin and Lee. To help you narrow down which is best suited to your lens collection, both manufacturers helpfully state the width of the individual filters each of their systems holds, along with the range of lens diameters they are designed to work with. As a rule, the larger the individual filters are, the more costly the system will be.

Protective, UV and skylight 1B filters

Clear filters are designed to protect the front element of your lens without affecting the image in any way. The basic premise is that it's preferable to trap dust and smears on a filter than on the front element of your lens, as the filter is easier to clean and much cheaper to replace if scratched or damaged.

In the days of 35mm film, photographers regularly used UV

filters when shooting outdoors, as film is especially vulnerable to the haze and blueish tint caused by UV light. While this isn't so much of an issue for digital cameras, many photographers are still in the habit of fitting a UV filter instead of a clear protective filter and leaving it on as an insurance policy against lens damage. The main difference between UV filters and skylight 1B filters are that UV filters are designed to filter out UV light while remaining colour neutral, whereas skylight 1B filters actually introduce an element of colour correction that produces a slight warming effect in images. For this reason, they are much less commonly used.

One drawback of using a protective or UV filter is that when shooting directly into the sun, the additional layer of glass increases the likelihood of lens flare. This is more common with cheaper UV filters than with more expensive, multi-coated examples. Either way, using a lens hood will help to reduce the chances of this happening.

Polarising filters

If you regularly shoot landscapes, then a decent polarising filter is essential, not least because some of its effects are impossible to mimic in Lightroom or Photoshop. At their most basic level, polarising filters

“With a polariser, skies become bluer and foliage greener. It's easy to see why they are so popular with landscape photographers”

work by filtering out reflected light from non-metallic surfaces, which is also known as glare. The effect is most pronounced when photographing water and glass, although they will actually cut the amount of light reflected from all objects. Using a polariser to shoot water, for example, will enable your camera to 'see' beneath the surface. It will also increase colour saturation and boost contrast; skies become bluer and foliage greener. It's easy to see why they are so popular with landscape photographers.

While the effects can be dramatic, there are a couple of things to bear in mind when using polarising filters. Firstly, they cut the amount of light entering the camera by about 1.5 stops, so you'll need to compensate by setting a longer shutter speed, wider aperture or faster ISO. Secondly, the angle of the sun greatly affects the strength of the polarising effect. As a rule, shooting at a 90° angle to the sun will produce the most pronounced results. But if you are shooting with an ultra-wideangle lens, you may also find that saturation levels in the sky are uneven across the frame, which is a direct result of the '90° rule'. Our best advice is to read up on polariser technique and get out and experiment.

Neutral-density filters

Neutral-density filters are used to reduce the amount of light that reaches the sensor. They are colour neutral by design, which means that colour and white balance are both unaffected by their use. ND filters are especially useful when you want to use a slower shutter speed in bright conditions in order to capture

movement in clouds or running water. In addition, they can also be used to smooth out rough seas when shooting seascapes, or to capture the light-trails of traffic in an urban environment. In especially bright conditions, the use of an ND filter also allows you to shoot at much higher aperture settings (typically f/1.4 to f/2.8) than would otherwise be possible in order to deliberately blur the background behind your main subject and make it stand out more.

ND filters come in a variety of strengths. Somewhat confusingly, these are expressed in slightly different ways by manufacturers. In purely practical terms, though, these descriptions all relate to the number of stops your exposure is altered by. The most commonly used ND filters are those that cut the amount of light hitting the sensor by one, two or three stops. Hoya, Marumi and Kenko label these with the ND2 (one-stop), ND4 (two-stop) and ND8 (three-stop) formula. Lee, Hoya and Tiffen, meanwhile, use the 0.3 (one-stop), 0.6 (two-stop) and 0.9 (three-stop) formula instead. In this respect, there is no difference between a ND2 and a 0.3 ND filter – they are both the same strength. Square ND filters can also be stacked one on top of the other for added strength, although you do run an increased risk of vignetting and color shifting the more you combine.

In addition to the main low-strength ND options, there are an increasing number of more powerful ND filters on the market that are designed primarily for long-exposure enthusiasts. Lee makes perhaps the best-known of these

SQUARE FILTER SYSTEMS

Cokin offers four square filter systems: the entry-level A-Series system, designed for lenses ranging from 36–62mm in diameter; the P-Series, for 84mm-wide filters for lenses ranging from 48–82mm in diameter; the Z-Pro series for 100mm-wide filters and 49–96mm lenses; and the X-Pro system, for 130mm-wide filters and lenses with a diameter of 62–112mm.

Lee offers three systems. The Seven5 employs 75mm-wide filters and is primarily for CSCs, with a range of adaptors from 32–77mm in diameter. The 100mm system holder can be customised to hold up to three filters. This attaches to the camera via an adaptor ring, with Lee offering a standard one for lens diameters of 49–105mm, and another one specifically for use with wideangle lenses, which covers 49–82mm. The SW150 system, meanwhile, can be used with a handful of ultra-wideangle lenses between 12–24mm and employs 150mm filters.

extreme ND filters in the guise of the 10-stop 'Big Stopper' and six-stop 'Little Stopper', both of which can be used with Lee's square filter 100mm system, or indeed Cokin's Z-Pro system. Circular-shaped alternatives, such as the six-stop Hoya Pro ND64 and 10-stop Hoya Pro ND1000 are also popular. One useful tip when using powerful ND filters for long-exposure photography is to keep your eyepiece covered up while the shutter is open, as light can creep in this way and affect your image.

Neutral-density grads

Graduated ND filters, or ND grads as they are commonly called, work the same way as regular ND filters. However, their crucial difference is that only half of the filter is treated, to reduce the amount of light entering the camera, with the other half being completely clear.

While some manufacturers offer circular ND grad filters, most landscape enthusiasts opt to use the square types (that are actually rectangular in shape), as this allows them to be more accurately positioned within the filter holder to cover the area of the frame where you need to block out light. In addition to moving the filter itself up and down within the holder, most filter holders can also be rotated, which allows you to block light out of a specific corner of the frame rather than across a straight horizontal axis.

As with regular neutral-density filters, ND grads are rated in terms of their light-stopping power, with their strength described in exactly the same way as regular ND filters. One additional thing to look out for is how subtly the gradation occurs across the filter. In this respect, the term 'hard gradation' refers to an ND grad with a fairly abrupt transition between the darkened area and the clear area, whereas a soft ND grad is one that transitions more subtly over a greater portion of the filter.

You can, of course, apply neutral-density graduated filter effects in Lightroom and Photoshop. However, in our experience, it always pays to be as precise as you can at the time of capture, simply because if you blow the highlights in-camera it can be very difficult to get them back in post-production.



TREBARWITH STRAND, CORNWALL © AUDLEY JARVIS

A Lee Little Stopper enabled me to use a long shutter speed. A 0.6ND grad helped retain highlight detail in the sky. Nikon D750, 24–70mm at 32mm, 30 seconds @ 1/9, ISO 200

Essential filters for your kit bag

If you're looking to get started with filters then the five on this page all come with the *WDC* seal of approval. Note that prices quoted are the manufacturer's suggested retail price, not the rock-bottom prices you'll find online. But shop around a bit and you'll find some generous discounts.

Enthusiast and professional-grade filters
Stepping things up a bit, the six filters on the opposite page are the type commonly used by enthusiasts and professionals. While you can expect to pay substantially more, these offer the best possible performance. Again, prices quoted are the manufacturer's suggested retail price before any discounts have been applied – don't forget to shop around!



Cokin H250A ND Grad Filter Kit **£39**

WWW.COKIN.CO.UK

This excellent starter kit comes with three ND grad filters in different strengths (ND2, ND4, ND8), plus a Cokin P-Series filter holder that can accommodate up to three filters at a time. You'll need to buy a lens adaptor ring separately, but other than that there's everything you need here to get started with ND grads. The filters themselves are 84mm wide, which makes them suitable for most entry-level and mid-range DSLR and lens combinations, up to a maximum lens diameter of 82mm.

KEY SPECS

AVAILABLE LENS DIAMETERS

(via P-Series adaptor ring)
48, 49, 52, 55, 58, 62, 67, 72, 77 & 82mm

CONSTRUCTION

Plastic filter holder, resin filters



Tiffen UV Protector **£10 – £30**

WWW.TIFFEN.COM

Tiffen filters hail from the USA, and are manufactured in the company's Long Island factory in New York state. Tiffen has long been a player in the world of film, TV and photography and makes a large range of filters and optical equipment. This standard UV protector is a cost-effective way of protecting the front element of your lens from scratches, smears and dust while also cutting out the haze and blueish tint that is associated with UV light.

KEY SPECS

AVAILABLE LENS DIAMETERS

25, 28, 30, 30.5, 34, 37, 40.5, 43, 46, 49, 52, 55, 58, 62, 67, 72, 77 & 82mm

CONSTRUCTION

Metallic ring, glass filter



Kenko Pro1 Digital Wideband Circular Polariser **£64 – £125**

WWW.KENKOGLOBAL.COM

Hoya and Kenko are owned by the same Japanese parent company (THK), and both offer a 'Pro1 Digital' range of filters. Are there any differences in quality? According to Kenko's UK distributors, the answer is 'no'. Basically, both filters are exactly the same and are constructed from the same low-profile matte-black rim, and the same digital multi-coating (DMC) glass filter. Despite this, Kenko filters are often cheaper than Hoya. Indeed, WEX Photographic is currently offering a 75% discount on all Kenko Pro1 polarising filters while stocks last.

KEY SPECS

AVAILABLE LENS DIAMETERS

37, 40.5, 43, 46, 49, 52, 55, 58, 62, 67, 72, 77 & 82mm

CONSTRUCTION Low-profile matte-black aluminium frame, digital multi-coated glass filter



Hoya Pro ND64 **£65 – £140**

WWW.HOYAFILTER.COM

If you want to try your hand at long-exposure photography, then you'll want to invest in a high-strength ND filter such as the Hoya Pro ND64. This filter reduces shutter speeds by six stops, turning an unfiltered 1/60sec exposure into a one-second exposure. For something even stronger, the ten-stop Hoya Pro ND1000 (£75–£165) will turn the same 1/60sec exposure into a 15-second one. Hoya's Pro ND range sits above its regular ND range and benefits from metallic ACCU-ND coating that maintains colour neutrality regardless of filter strength.

KEY SPECS

AVAILABLE LENS DIAMETERS

49, 52, 55, 58, 62, 67, 72, 77 & 82mm

CONSTRUCTION

Low-profile matte-black aluminium ring, ACCU-ND coated glass filter



Hoya HD UV Filter **£32 – £60**

WWW.HOYAFILTER.COM

HD is Hoya's flagship filter range, with each filter in the series benefiting from hardened optical glass and an eight-layer multi-coating that's bonded to the surface of the glass in a process Hoya calls 'hard-coating'. This results in a much more robust filter than cheaper UV alternatives. The eight-layer multi-coating also greatly reduces the filter's reflective properties, enabling a light-transmission rate of 99.3%. The top layer of the multi-coating is also resistant to oil-based stains, which makes the filter much easier to clean.

KEY SPECS

AVAILABLE LENS DIAMETERS

37, 40.5, 43, 46, 49, 52, 55, 58, 62, 67, 72, 77 & 82mm

CONSTRUCTION

Ultra-thin metallic rim, hardened glass filter



Lee Filters 100mm Foundation Kit **£55**

WWW.LEEFILTERS.COM

The Foundation Kit contains Lee's bespoke 100mm filter holder and comes pre-assembled to hold two 100mm-wide filters. An extra set of guides is supplied, enabling you to expand its capacity to three filters. You'll need to buy an adaptor ring to fit the filter holder to your lens (£20-£40) plus the individual filters. Lee offers a range of filter packs that will save you a bit of money, the pick of which is probably the ND Grad Set (£200). This contains three ND grad filters in 0.3, 0.6 and 0.9 strengths, with a choice of hard or soft gradation options.

KEY SPECS

AVAILABLE LENS DIAMETERS

(via adaptor ring) 49, 52, 55, 58, 62, 67, 72, 77, 82, 86, 93, 95 & 105mm

CONSTRUCTION Polycarbonate frame and filter guides held in place by brass screws



Cokin U960 Z-Pro Pro ND Grad Kit **£120**

WWW.COKIN.CO.UK

If your budget won't stretch to Lee's 100mm system, then Cokin's Z-Pro Pro ND Grad Kit is an excellent alternative that offers good performance at a significantly reduced price. Within the box you'll find a Cokin Z-Pro filter holder that can accommodate two 100mm-wide filters, plus three ND grads in ND2, ND4 and ND8 strengths. You also get the Z306 filter wallet that can hold up to five filters plus the filter holder and an adaptor ring. In fact, the only thing you'll need to get started is a Z-Pro adaptor ring, which will set you back about £20.

KEY SPECS

AVAILABLE LENS DIAMETERS

(via adaptor ring) 49, 52, 55, 58, 62, 67, 72, 77, 82, 86 & 95mm

CONSTRUCTION Polycarbonate frame and filter guides held in place by brass pins



Tiffen Variable ND **£95 - £160**

WWW.TIFFEN.COM

The big selling point of variable ND filters is that they allow you to alter the strength of the filter by rotating the outer ring. The Tiffen Variable ND provides between one and eight stops in a single filter, meaning there's no need to swap or stack multiple filters. While variable ND filters can be used in exactly the same way as a regular ND filter to introduce motion blur or suchlike, they are especially useful if you own a fast lens and want to shoot at maximum aperture in bright, sunny conditions to help isolate your main subject from the background.

KEY SPECS

AVAILABLE LENS DIAMETERS

52, 58, 62, 67, 72 & 77mm

CONSTRUCTION Metallic rim, glass filter



Lee Filters Big/Little Stopper **£100**

WWW.LEEFILTERS.COM

The terms 'Big' and 'Little' don't refer to the physical size of these filters – both are available for Lee's CSC-friendly Seven5 format, the DSLR-orientated 100mm system and the super-wideangle-supporting SW150. Instead, the terms refer to their light-blocking power, with the Big Stopper providing 10 stops and the Little Stopper providing six stops. Each is made from high-quality glass and comes in a padded tin. Helpfully, Lee even provides a reference card with each filter that provides the necessary shutter-speed conversion times.

KEY SPECS

AVAILABLE LENS DIAMETERS

75x90mm, 100x100mm, 150x150mm

CONSTRUCTION High-quality glass



B+W XS-Pro Digital HTC Kaesemann MRC Nano Circular Polariser **£95**

WWW.BPLUSFILTERS.CO.UK

Manufactured by Schneider optics in Germany, this premium-grade polarising filter from B+W employs a multi-resistant coating (MRC) that improves light transmission and reduces ghosting. An additional nano coating has also been applied in order to repel dust and water. Optically, the filter is second to none, with the extra-slim XS-Pro mounting ring ensuring that vignetting is not an issue, even when the filter is used with ultra-wideangle lenses. The only issue is that you may be unable to use a lens hood on some lenses when the filter is in place.

KEY SPECS

AVAILABLE LENS DIAMETERS

40.5, 43, 46, 49, 52, 55, 58, 60, 62, 67, 72, 77, 82 & 86mm

CONSTRUCTION Low-profile brass rim, MRC nano-coated Schott glass



Hitech Firecrest IRND 4.8 **£120 - £130**

WWW.FORMATT-HITECH.COM

For unparalleled stopping power, the 16-stop Firecrest IRND filter from Hitech is currently the highest strength neutral-density filter on the market. Available as either a circular filter or in square format, the Firecrest IRND is constructed from 2mm thick Schott Superwhite glass and employs a carbon metallic coating that produces impressively neutral colour and also blocks out infrared contamination. If you want to take 2-3 minute exposures in broad daylight, then this is almost certainly the filter for you.

KEY SPECS

AVAILABLE LENS DIAMETERS

72, 77 & 84mm circular/
100mm & 150mm square

CONSTRUCTION Schott Superwhite glass

John Miskelly

COMBER, NI

I've been a professional photographer for the past 15 years, and have specialised in landscapes for the past five. My inspiration comes from the wild and rugged beauty of the British Isles and finds me drawn to our coastline and mountains.

I approach my photography in a very structured way. I spend time planning when to visit the location, taking account of the sun's direction, elevation and the tide times. I then work to get the best composition and wait for just the right light to capture the changing moods of nature, enabling me to create an image that reflects what I felt and saw while at the location. The final print makes it all worthwhile and I always use the wonderful Canson Infinity fine art papers.

I love to share my experience and passion on my workshops; seeing participants growing as photographers is very satisfying.

I'm currently working on a new project, using very long exposures of at least 10 minutes. I believe it's incredibly important to **challenge yourself**

to do **something different and push your own artistic boundaries.**



WWW.JOHNMISKELLY.CO.UK

JOHN USES A

Nikon D810



I use a Nikon D810, along with the 24mm f/3.5 PC-E, 45mm f/2.8 PC-E and Zeiss 21mm f/2.8 Distagon. My LEE filters include a full set of hard and soft ND grads and a Big and Little Stopper. I use a Really Right Stuff TVC-33 carbon tripod with BH55 ball head and RRS panorama package. I also use a Fuji XT-1 and 14mm and 23mm XF lenses for travelling.





3



1 Callanish standing stones

This was one of those days on the Isle of Lewis where all four seasons occurred within a very short time. The hail had just stopped and I captured this image as the storm clouds were still behind the stones, but the sun had come out, giving a lovely light.

Nikon D800E, 45mm PC-E, 1/60sec @ f/16, ISO 100, 0.6 ND grad, stitched panorama

2 Sleah Head, Dingle, Ireland

This rugged coastline has stunning beaches and sheer cliffs. This evening looked like there would be no sunset, but as often happens, the streak of red showed through for just a brief moment.

Nikon D800E, 45mm PC-E, 30 seconds @ f/8, ISO 800, 0.9 ND grad and Big Stopper

4



3 Plemont Beach, Jersey

A storm was moving across and I had to stand waist deep in a sea pool to get the right composition. Timing was crucial, as 15 minutes earlier the rocks were underwater.

Nikon D800E, 24mm PC-E, 30 seconds @ f/9.5, ISO 100, 0.9 ND grad and Big Stopper, stitched panorama

4 Portsalon, Donegal

I returned a few days after taking this image, and the stream had disappeared, highlighting how the beach can change.

Nikon D800E, 24mm PC-E, 1/125sec @ f/11, ISO 200, 0.9 ND grad, stitched panorama



Making the switch

DAMIEN LOVEGROVE

PORTRAIT

Damien has forged a successful career as a high-end wedding and portrait photographer



Three top photographers reveal what was behind their decisions to switch from their DSLRs to the **Fujifilm X Series** range of cameras

It was about four years ago that I got a Fujifilm X100. I saw it at the Photokina photography fair, and it was so beautiful and retro I could tell straight away that it was going to be a machine that was lovely to use. I didn't need it, I desired it and decided to buy it. I kept bringing it out at shoots and it just transformed the way I worked. It felt totally natural, while the fixed lens meant I didn't have any decision-making to do.

I then added the X-Pro1 with XF18mm F2.8, XF35mm F1.4 and XF60mm F2.4 lenses. Its first proper outing was my road trip of Route 66. My finance director (Julie, my wife)

wouldn't let me put the X-Pro1 camera purchase through the business as it was not an absolutely necessary expense saying, 'You have a perfectly good Canon camera kit already'. So I paid for the Fujifilm X-Pro1 kit out of my own savings – that made it feel even more special.

The X-Pro1 was a joy to use and the images it gave me matched my Canon EOS 5D Mark II for quality. I never picked up the Canon again and I'm now using the Fujifilm X-T1 for all my day-to-day shooting. There's lots to love about it, but its flip-out screen is perfect for me. I prefer to shoot from the hip, and use it like a waist-level viewfinder. It

allows me to communicate with my subject without having this great big block in front of my face.

All the Fujifilm XF lenses are amazingly sharp wide open and that's where I like to use them most of the time. The XF35mm F1.4 lens is great at wide open for intimate portraits with a wonderfully controlled bokeh.

The Fujifilm advantage is that the system is small, offers super image quality and above all else is a joy to use. The fun I get from photography has a lot to do with the kit I'm using and I've never felt more creative than I do right now. I've said goodbye to DSLRs for good.

For further information, and special offers and competitions visit www.amateurphotographer.co.uk/fujifilm-x



© PAUL SANDERS



This is not the first time going compact has been a feature of my life. Back in 2004 I was instrumental in the way The Times changed its view of photography, when it downsized from a broadsheet to the more modern and convenient compact format. That was a change that required a leap of faith, commitment and patience.

I swapped to the Fujifilm X Series from a DSLR and 5x4 large format camera, because I found that, in effect, the cameras became a barrier to my photography; but freeing myself up with a smaller and lighter body and limiting my lens choice took the indecision out of shooting landscapes. Without the camera acting like a brick wall in front of me, it made me connect with the landscape much more than I had before. Instead, the camera is now just something I see the landscape through and something with which I'm able to translate my ideas and imagination.

The lens I use most is the FUJINON XF23mm F1.4 – I absolutely love it. It stays on my camera quite a lot of the time, but I'm also very fond of the XF56mm F1.2 for landscapes as I tend to find that if I close in a little bit I can capture much

PAUL SANDERS

FINE-ART LANDSCAPES

Paul left his role as Picture Editor of *The Times* in 2012 to pursue his passion for fine-art landscape photography



more interesting compositions.

My favourite thing about the X-T1 is its electronic viewfinder. I utterly love it. I thought I'd hate it, but then fell for it almost straight away. I really like the fact that I can see exactly what I'm getting before I press the shutter. It means I don't spend a lot of time with my eye away from the camera, and I'm not constantly 'chimping' the back reviewing shots. I can see the tones change as I alter the exposure while I look through it, and the coverage and size are wonderful.

I'm happy I've made the switch, and for the second time in my photographic life going compact will lead to interesting and challenging times – but I know that I've made the right move for me.



© MATT HART

MATT HART

STREET AND EVENTS

Matt is based in Liverpool where he puts his passion for black & white into practice and runs street photography workshops



I'm what you'd call a candid street photographer. I don't, generally, shoot people when they know I'm looking at them. Funnily enough, my main line of work is shooting events, where I'm always talking to people, interacting, getting them to pose in a certain way; but on the street it's the complete opposite – I don't talk, don't make eye contact, nothing at all.

When I changed over to digital, I found DSLRs to be too big and bulky for my work. Also, when I was going out shooting street photography, the cameras were so large that I was getting noticed. When I did any events work, I was just getting worn out because I was lugging all this kit around. I'm not getting any younger, and carrying around huge DSLRs and the massive kit that goes with them became a problem. So I changed over to the Fujifilm X-system

basically for size, and then found

out how brilliant they actually were.

I shoot a lot with the Fujifilm X100T and I love that camera. It has a fixed lens equivalent to 35mm, but if I'm using other Fujifilm cameras like the X-T1 or X-T10 for street, I use either the XF35mm F1.4 (50mm equivalent) or the new XF16mm F1.4 (24mm equivalent) so I've got one to get me in a little bit closer and one to give me a wider view.

With a background in film, you'd think that my favourite element about the X100T would be the hybrid optical viewfinder, but I just love the rear screen. To be able to see what you're doing all the time without putting the camera to your eye is great.

The X-T1 is perfect for street photography because of three key factors: the tilting screen, its speedy shooting, and its small size. People don't recognise it as a professional-looking camera either, so it's perfect for the kind of photography I like to do.



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Take family portraits with your **Canon DSLR**

Want to capture great images of family and friends? Read on!

WORDS AND PICTURES **TOM CALTON**

Whether it's your own family, a friend's or a relative's, practically every aspiring photographer has tried their hand at taking family photos at some point in their lifetime. Those who have tried it may have found that it's not always as simple as it first seems, and if you truly want to capture

some memorable moments of your family (or someone else's family for them), a little bit of prior insight and knowledge can really go a long way.

If you've ever wanted to improve your skills at taking stunning family images, then you're in luck as here we'll be covering some useful tips and tricks that when applied will greatly improve your chances of capturing

some breathtaking family photos.

One of the great things about family photography is that you don't have to shell out on a bunch of expensive equipment in order to capture great shots – all you really need is a DSLR and a portrait lens. A 50mm lens is a popular choice among portrait photographers as this focal length is said to be close to that of what the human eye sees. And the good news is that Canon currently offers a 50mm f/1.8 STM lens at £97, which means you won't have to break the bank to get started. This lens in particular offers a wide maximum aperture of f/1.8, which will allow you to create a really shallow depth-of-field for professional-looking portraits.

The first step to any shoot is



Remember to keep the mood light and make sure your subjects feel relaxed when you're taking family photographs

finding a good location. Ideally you'll want to find somewhere that offers a variety of scenic backdrops; local nature parks and country walking trails are often top choices and can be easily found with a bit of internet searching. If the family has young children, it's often a good idea to choose a location that can offer some form of entertainment for them, such as a child's play park.

Build a rapport

The most crucial thing to remember when taking family photos is to keep the mood relaxed and fun. Most people feel uncomfortable about having their photo taken, so it's your job to make sure that they feel calm and relaxed right from the get go. If you maintain a positive and polite approach, then chances are your subjects will adopt the same attitude and the results will almost definitely show in your photos. Also, be aware that some people will naturally take longer to relax than others – especially if it's the first time that they've been on a photo shoot. I often like to spend the first 10-15 minutes of a photo shoot simply walking and talking with the family before I start taking any photos. Not only does this give me a chance to get to know the family better and start to build up a rapport with them, but it also gives them a chance to get to know me too, which will ultimately put them at ease.

Positioning your subjects in fun and creative ways can be daunting for any aspiring photographer. When starting out, the best way to understand which positions work best is to take

KEEP UP WITH THE ACTION

Family photos don't always have to be stationary, and young children will quickly lose interest anyway. Instead, get the children to run around and play and capture the action as it unfolds. Set your camera's AF Mode to AI-Servo – this allows the camera to search for targets as long as you have the shutter button either half or fully depressed, which is ideal for moving subjects. Take a series of shots in quick succession to increase your chances of bagging a perfect sharp image. So stock up on memory cards!



Lenses with a wide maximum aperture will blur backgrounds. Canon EOS 5D Mk II, 50mm lens, 1/320sec @ f/1.8, ISO 200

“Find a good location – ideally one that will offer a variety of scenic backdrops”

inspiration from other photographers. There are a wealth of photographs online, and once you find an image that you want to adapt, try taking a screen shot or making a written note of it and taking it with you to your shoot for reference. You'll soon find yourself getting to grips with which poses do and don't work well.

Use aperture priority

Using a shallow depth-of-field will allow you to throw the background into a thick, pleasing blur, which will not only help to remove any would-be distractions from the background, but also to help draw the viewers' attention on to your subject. Switching your camera over to aperture-priority mode (Av on the mode dial) will allow you to set the

desired aperture while the camera takes control of the shutter speed, allowing you to concentrate on getting the composition just right. However, it's also a good idea to keep one eye on the shutter speed while you're shooting to ensure that it doesn't drop below 1/120sec, as this can cause your images to blur from camera shake. If the shutter speed does drop due to a lack of ambient light, increase the ISO to compensate.

The key to any good portrait is ensuring that your subject is pin-sharp and in focus, and part of this is to do with the aperture. When photographing one or two people standing next to each other, use a wide aperture such as f/2 or f/1.8 as it'll achieve a nice blur to the background and foreground, while

Step by step

How to set up your Canon DSLR to shoot better family portraits

STEP 1



USE A PORTRAIT LENS

In order to achieve photos with a nice shallow depth of field, you're going to have to use a lens that offers a wide maximum aperture – f/2.8 or wider is preferred. Prime lenses are able to offer super-wide maximum apertures, compared to most mid-range zoom lenses that are much more limited.

STEP 2



SWITCH TO APERTURE PRIORITY

Switch to Aperture Priority mode (shown as Av on the Mode Dial). Now you can set the aperture while the camera takes care of the shutter speed, which is ideal for portraits. Depending on the amount of available light, you may also need to increase the ISO to ensure you're achieving a shutter speed of at least 1/150sec.

Make photography fun

Working with young children can be a daunting task for any photographer, though it really doesn't have to be. The important thing is to ensure that you keep the children engaged and entertained for the entire shoot. Try taking a few shots and then showing them the

results on the back of the camera – they'll soon understand what it is you're doing and it'll help them to feel part of the experience. Asking them to pull their best funny face is always a good way to encourage some smiles out of them, while choosing a location with plenty of

things to see and do will make sure that they don't get bored.

It's also vital that you try to work fast and efficiently, as dragging the shoot on for too long will ultimately increase the chances of the children growing tired or bored, which will only make things harder for you.

keeping the subject(s) sharp. With multiple subjects though, it's often wise to favour smaller apertures, such as f/4 or f/5.6, to increase the size of the in-focus area within the photo and ensure that everyone is kept sharp.

When it comes to focusing on your subject, it's key that the eyes are kept in focus. The easiest way to do this is to frame up your shot and while still looking through the viewfinder simply move the active AF point until it

You don't need lots of expensive kit to take great family images. Canon EOS 7D Mk II, 85mm lens, 1/250sec @ f/4, ISO 200



hovers over the eyes of your subject, then, half depress the shutter button to lock on focus. Moving the active AF point can done by pressing the AF Point Selection button and using the d-pad to move the point.

Alternatively, on some camera models that feature a secondary d-pad you can set it up via the setting menu so that it can move the active AF point on the fly, allowing you to adjust the AF much more quickly.

Always be ready

Sometimes the best photos you'll capture are the ones that just happen in the spur of the moment, so always keep your eyes peeled for these opportunities and ready yourself to capture the action. Don't get disheartened if you miss a few moments when first starting out as it's bound to happen, but rest assured that with more practice you'll soon be able to fine-tune your senses to instinctively reach for your camera the moment you see a great shot about to reveal itself. It always pays dividends to set up your camera correctly to better your chances of bagging the shot. So, start off by setting your camera's drive mode to High Speed Continuous as this will allow you to rattle off a steady stream of shots by simply holding down the shutter button. Not only will this allow you to keep up with the action for moving shots, such as children running or playing, but it'll also mean that you can easily take multiple images of posed shots to increase your chances of bagging a photo without someone blinking in it.

STEP 3



SET THE APERTURE

If you're shooting one or two people, set the aperture to a nice wide setting – f/2 or wider should work well. This will enable you to turn the background into a pleasing blur. If shooting three or more people it might be a good idea to use a smaller aperture of around f/4 to ensure that everyone is in focus.

STEP 4



ENABLE CONTINUOUS SHOOTING

Locate and press the Drive mode button on your camera. Set the Drive mode to High Speed Continuous mode. This will allow you to take multiple shots in quick succession by simply holding down the shutter button, which will increase your chances of bagging a great shot – especially with moving subjects.

STEP 5



COMPOSE & FOCUS

While looking through the viewfinder, compose your shot. Now, move the active AF point so it's hovering over the eye of the person in the centre of the frame. Half depress the shutter button to lock focus, then fully depress and hold it for a short while to take a short burst of images.

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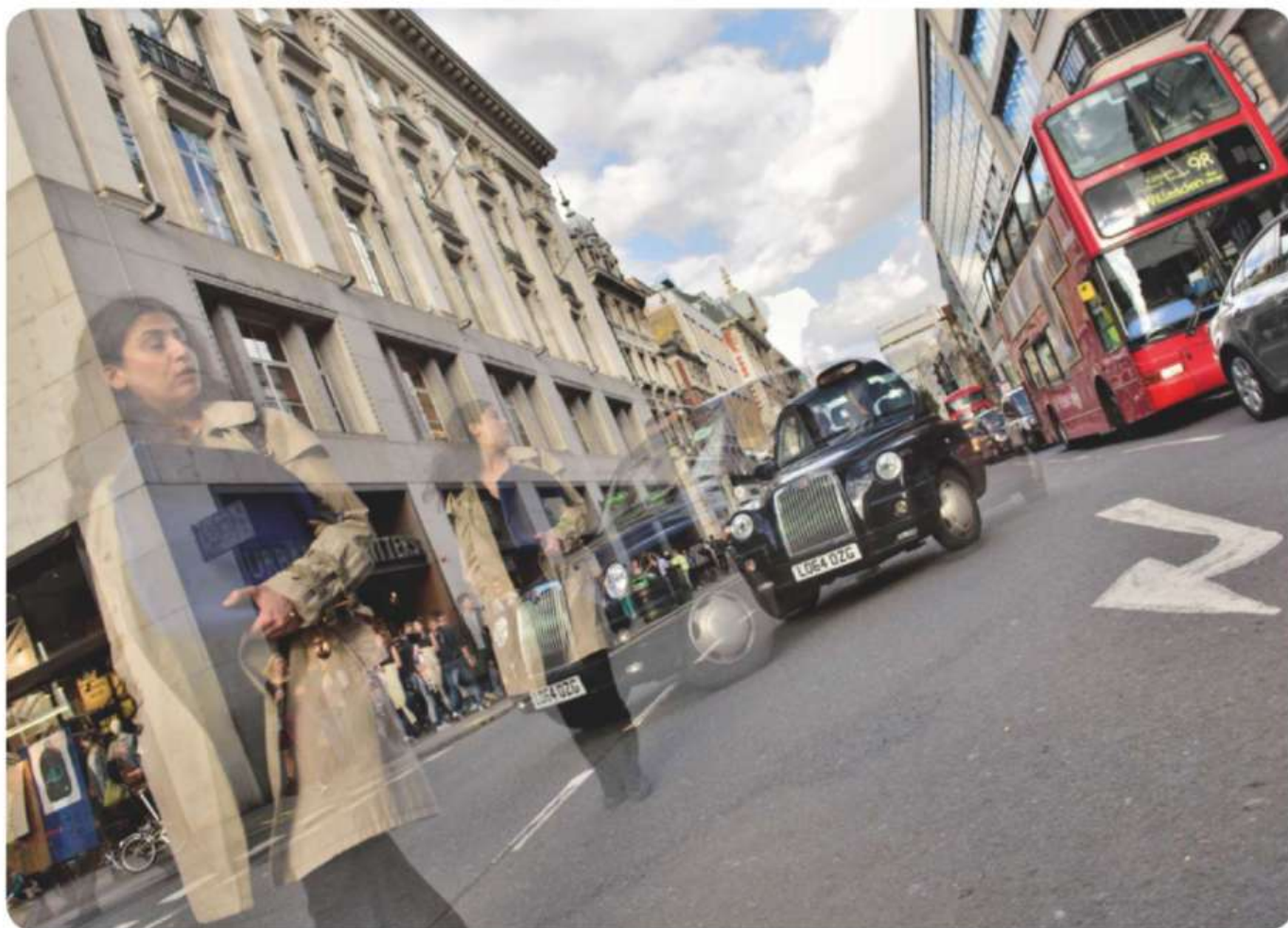
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Shooting multiple exposures with your **Nikon DSLR**

Thanks to digital, combining two or more images can be as easy or as complicated as you like

WORDS AND PICTURES **MARK HIGGINS**

In the pre-digital days, shooting multiple exposures was an advanced technique. In order to obtain the correct exposure for the composite photographers had to adjust the exposure of individual frames and hope that their sums were right. Nowadays, the technique requires little more than a tripod, a DSLR with Multiple Exposure mode and plenty of imagination.

Many photographers dismiss the technique as a bit of fun, but with trial and error you can obtain some seriously good results. Multiple

Street photographers use multiple exposure to inject a sense of movement into their images. By using a tripod, the buildings in the background are not repeated, avoiding a distracting mess

exposures can bring a sense of movement to your stills, which is why so many sports and dance photographers are fans. During the 2012 Olympics, for example, photographer Julie Jacobson created a striking composite of American gymnast Kyla Ross performing a routine on the balance beam. Looking at the picture you can see the exact path her body takes from the start of one manoeuvre to the beginning of the next.

Aside from sports and dance photography, multiple exposures

are also popular with street photographers, who use them to convey movement and energy: a shot of commuters rushing home could be combined with images of fast-moving traffic, for example. Multiple exposures are also great for shooting fireworks, as numerous explosions can be recorded in a single frame. Astrophotographers are also quite partial to the technique, combining star trails with static objects such as trees, castles and rocks.

Some artists use multiple exposures to produce textured silhouettes. Portland-based photographer Sara K Byrne, for example, has truly mastered the technique, filling human outlines with images of blossom, petals and even electricity pylons! And then there's the novelty of 'cloning' yourself (or a friend) to give the impression of being in two, three or even 10 places at once. In short, multiple exposures can be fun, but the results can also be seriously good.

Backgrounds and exposure

Before you start combining frames, however, there are a few things

that you need to be aware of. Firstly, if your subject has a busy background you need to either move it, or move yourself, until this area is clean and uncluttered. It might sound drastic, but if your background contains faces, trees, buildings etc and the camera moves even slightly during the exposures, you will see parts of these objects repeated in the final composite. Overcast skies, black curtains and painted walls all make great backdrops, so crouch down, change lenses, move your feet – do whatever it takes to make sure that people concentrate on your subject, not a distracting mess behind it. To reduce any camera movement, a tripod is essential (see *opposite*).

Secondly, when you combine two or more shots, there is a strong chance that the composite will appear underexposed, because it has increased in density. Generally speaking, the more frames you add, the denser the result. To avoid an underexposed composite, you need to adjust the exposure of individual frames, making sure that they amount to the 'correct' exposure for the final composite. If this all sounds too complicated, fear not, many DSLRs can carry out the calculations for you.

Finally, while multiple exposures can now be created in-camera (see *below*) most composites will still benefit from a little post-production work, so be prepared to spend some time in front of the computer.

In-camera options

Nikon DSLRs (from the D7000 onwards) offer two ways of combining exposures: Multiple

Creating multiple exposures using Photoshop

If your camera lacks a multiple exposure mode, or you would like to combine files that aren't saved on a memory card – pictures originally shot on film, for instance – you can achieve the same effect using Photoshop. To keep things simple, start by merging just



Subtlety and simplicity is key to success when combining images

two images. Having launched Photoshop, open your images: File>Open>Open. Remove any dust or blemishes using the clone/patch tools. If your files have different dimensions, re-size them so that they match.

Choose one of the images to use as your 'base' exposure. Select your second picture: Select>All. Click on the Move tool in the tools palette and drag and drop the second picture over the first. Line them up carefully.

To reveal the base layer, head to the Layers palette and locate the Opacity slider. Move the arrow left or right until you have a blend you're happy with.

Still in the Layers palette, click on the drop-down menu next to the Opacity slider. Here you will find a list of blending options. You can leave this set to Normal, or experiment with the others.

When you're happy with the effect you've achieved, flatten the layers: Layer>Flatten image. Save the file.

Exposure mode (found in the Shooting menu) and Image Overlay (found in the Retouch menu). The main difference between these two settings is that the first creates composites from images taken in a single session (action as it unfolds, if you like) and the second combines two pictures from the same memory card – regardless of whether they were taken seconds, months or even years apart. At present, the most popular way to merge frames is via the Multiple Exposure mode.

It might be close to the bottom of the Shooting menu, but Multiple

Step by step

How to set up your Nikon DSLR to take multiple exposures

ONE



Mount the camera on a tripod. Compose and expose the shot as usual. Make sure Live View is switched off. Locate the Multiple Exposure mode in the Shooting menu and press the Multi selector right to open the submenu. (Menu>Multiple exposure>Multi selector right).

TWO



Once the submenu opens, make sure that Multiple exposure mode is highlighted. Press the Multi selector right to turn the feature on.

Exposure mode has some features that deserve top billing. Having attached your camera to a tripod, and composed and exposed as normal, you can choose between shooting a series of images or capturing individual frames (the number of pictures you decide to include in your composite is up to you – pro-spec models such as the D810 can shoot up to 10 frames before pausing to merge them). To begin with, it's a good idea to stick to shooting single frames and limit the composite to maybe two or three exposures.

Once you've selected Multiple Exposure mode, you will be offered the choice of turning Auto gain on or off. Making the right decision here can be the difference between a stunning composite and an unusable file. If you leave Auto gain on, the camera will carry out the exposure calculations for you; if you turn it off, you're on your own.

Let's say you want to create a composite from two pictures, for example. With Auto gain on, the camera will adjust the exposure for each image, ensuring that the frames add up to the 'correct' exposure for the final composite. If you decide to switch Auto gain off, you'll have to adjust the exposures yourself using the aperture, shutter speed or ISO controls. There are benefits to tweaking the exposures

“The most popular way to merge frames is via the Multiple Exposure mode”

TRIPODS

With multiple exposures, you need to keep the camera in the same position, and avoid vibration, until the final exposure for your composite has been taken. Using a tripod and remote release will allow you to hold everything still, while concentrating on the action. When choosing a tripod for this technique, the usual advice applies: ensure it can bear the weight of your heaviest body and lens, remember that carbon fibre is lighter than aluminium (but ask yourself how important this is) and make sure the height when fully extended reaches at least eye-level.



This example demonstrates why a busy background doesn't work, as the result is confusing

manually, but to start with it's best to leave Auto gain switched on.

The second method, Image Overlay, works by combining two existing Raw (NEF) files from the same memory card, and saving the result as a new Raw file – leaving the 'source' images untouched. This has the advantage of allowing colour, contrast, tone, sharpness etc to be adjusted in post-production without losing any detail. Image Overlay

allows you to see a preview of the composite before you commit yourself, with adjustments displayed in real time.

Even with the assistance of instant previews and automatic exposure adjustments, creating multiple exposures still requires trial and error. But if you start by merging two files, then move on to three, four etc, you will soon find your technical ability, and your confidence, growing.



Left and below: Two simple images that, alone, don't amount to much. Right: The composite tells a story about time passing



THREE



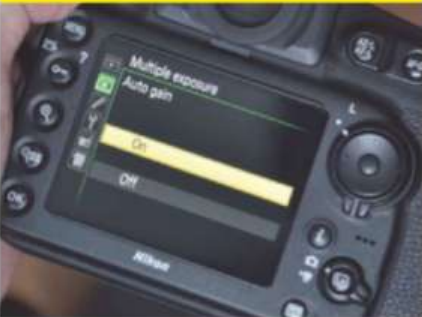
When the submenu opens you have two options: On (series) and On (single photo). If you select On (series) the camera will shoot up to 10 frames and merge them into one. If you select On (single photo), normal shooting will resume after you have created a single multiple exposure. Highlight an option and press OK.

FOUR



Now you can choose the number of frames you would like to include in your final composite. Highlight Number of shots and press the Multi selector right to open up the next screen. Press the Multi selector up or down to alter the number of frames. Press OK.

FIVE



The final screen gives you two options: Auto gain On or Auto gain Off. To begin with, it's best to leave this feature switched On (Highlight On and press OK), because it instructs the camera to carry out the exposure calculations for you.

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Configuring your X-series camera for wildlife

Leaving you joyous or frustrated, wildlife photography can be challenging, but with the right set-up and techniques, it's possible to master the subject. Here's how to do it the mirrorless way...

WORDS AND PICTURES **BEN CHERRY**

Action photography requires a bit of knowhow and technique to ensure a high percentage of success. Wildlife is my 'action' photography, and despite this quite specialist subject matter, the skills required for it are relevant to many other genres, from photographing motorsport to freezing that timeless moment of the bride walking down the aisle. One thing that can make all the difference with fleeting moments and can't necessarily be purchased is knowledge of your subject. I am an environmental photojournalist, but I am also a zoologist. Scientific knowledge helps me to understand my subject matter; just as a top-flight football photographer's addiction to the Premier League helps them to judge a situation best. Knowledge is power when it comes to action photography, helping you to be in

Even with a high ISO, low light means a slow shutter speed is necessary. You can exploit this by panning with the subject, so that a sense of movement is introduced to the image. Fuji X-T1, XF50-140mm at 90mm, 1/40sec @ f/8, ISO 1000

the right place at the right time. But that isn't to say that your equipment isn't important in helping you grasp that special moment.

My love for the natural world started early in my childhood and has steadily blossomed as I continue to spend more time in the great outdoors. It quickly became apparent that I wanted to share my 'wild' moments with others, and photography was the medium to allow this. Developing wildlife photography with the X-series has been an interesting progression. From dealing with initial limitations that conjured creativity to now having products that encourage me to raise my game, the evolution of this system has stimulated my own. High performance equipment allows you to worry less about fundamental photography factors like subject sharpness, noise and exposure; instead you can focus on composition

and the subject itself: what is it doing now? Where is it going to go next? How can I place this within the scene?

Mirrorless cameras are becoming a dime a dozen, as camera companies start to understand and exploit the benefits of being mirror free. A range that is standing out for various reasons is Fujifilm's X-series; with a wide range of lenses, plus sleek functional designs, this compact system is quickly becoming the tool of choice for many photographers. Previously, one of the main things holding the X-series back from all-round appeal was the autofocus capability, but recent upgrades have changed that. Generally for action photography you need a system that provides snappy autofocus to keep up with moving subjects, as moments can be lost in a millisecond, leaving you exasperated. The much-improved X-T1 and recent award-winning X-T10 are cameras that are ready to capture action as it unfolds in front of you.

Setting up your X-series

The X-T1/10 cameras house more advanced autofocus capabilities

than other current X-cameras. This is important to bear in mind when looking at the X-series for action. These cameras have three autofocus spreads (single point, zone and wide/tracking) to choose from; depending on your subject matter they all have their pros and cons. You can then choose from manual, single and continuous focus, usually found on the front of the camera, and again each has its own benefits. A technical point that is important to note is that if you are using high-speed continuous shooting with continuous autofocus set to wide/tracking then the autofocus area reduces to the centre range, for phase detection autofocus points only.

My personal preference is to use a single autofocus point as it allows me to precisely control the focus, which is especially important in 'busy' situations if there is a lot within the frame that could distract a broader focus area. It is also very easy to adjust via the back pad on cameras. But if your subject is filling the frame or you have multiple subjects together then you might choose a wider focus area. Generally, all Fujinon lenses focus very quickly in single autofocus mode, so only when the subject is moving quickly should you switch to continuous. An exception to this is when using wide apertures in dull conditions. I often switch to continuous focusing even if the

Movement

Panning can be very effective with action photography as it highlights motion. There are two reasons why you opt for this: a) You think it will encapsulate the moment better than freezing the subject, or b) There simply isn't enough light to freeze the subject! If it is the former, I try to ensure I'm using an aperture that'll offer a good depth of field, keeping the subject sharp (f/8 or higher), and then I drop the ISO until I reach the kind of shutter speed I'm after. The shutter speed you choose is dependant on the speed of your subject. The slower the subject, the slower the shutter speed needs to be to perceive motion. The picture of the macaw flying (*previous page*) was taken at 1/40sec. To add a little spice, you can bring flash into the mix to freeze some detail, but be careful, as trying to get the right balance of ambient light and flash can be difficult and detract from enjoying the moment.



Continuous AF ensures the most important element of your composition remains sharp.
Fuji X-T1, XF16mm, 1/350sec @ f/1.4, ISO 2000

subject is only moving slowly; this ensures that the small depth of field stays exactly where you want it (the elephant herd picture, left, is an example of this). There is no need to worry about sharpness, as one big advantage of mirrorless cameras is that the autofocus is locked onto the sensor itself, not via a mirror. Micro-adjustments found on most DSLRs are no longer required, making working with wide apertures such as f/1.2 to f/2.8) a breeze.

Tack-sharp focus and live exposure compensation via the electronic viewfinder (EVF) means that you can be more efficient with your photography. You can take fewer photos knowing that you are getting the desired results, so you can enjoy the moment more.

Lens choice

The camera is very important as it houses the fancy algorithms to create focus lock, but for me, the lens range

Step by step

How to set up your Fuji X-series camera for wildlife

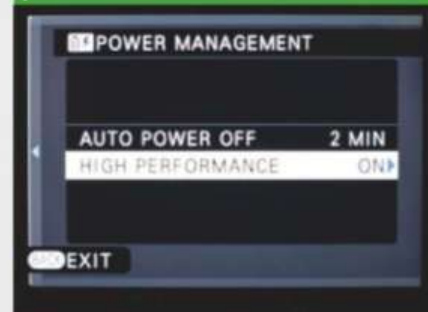
STEP 1



FOCUS PRIORITY

Configure autofocus to prioritise focus instead of frame release, ensuring that the camera will only fire when it has a confirmed lock-on.

STEP 2



POWER MANAGEMENT

By default, high performance mode is off on X-series cameras. For better performance, it's worth changing it to on, though this will drain your battery a little more.

takes precedence over camera bodies as there are very few cameras on the market that offer poor autofocus, but not all systems have the most appropriate lenses for action photography – not yet, anyway. The likes of the XF16-55mm f/2.8 and XF50-140mm f/2.8 are stand-out examples, with weather sealing and quick autofocus that works in the gloomiest of conditions. But that isn't to say primes aren't useful – the XF16mm f/1.4, XF23mm f/1.4, XF56mm f/1.2 and XF90mm f/2 are stellar lenses and exceptionally fast. The extra light offered allows you to capture sharp images that wouldn't be possible with slower apertures, or protect your photos from noise by allowing you to drop the ISO down. Though prime lenses are a joy to use, zooms offer versatility that can be the difference between getting and not getting that action shot. My XF16-55mm and XF50-140mm have been put through a gruelling year so far, spending most days in humid tropical conditions, definitely way beyond Fujifilm's recommendations, but they are still producing the shots.

Having equipment that you are familiar with and trust to produce what you want makes for a winning combination when it comes to wildlife and other action photography.

General settings

With one of the zoom lenses attached to either the X-T10 and/or X-T1, I will have the lens usually set to f/2.8, as they are sharp wide open and offer the fastest possible shutter speed. I will increase this to a larger f-stop if I have time, a suitable shutter speed and a need for a larger depth of field. ISO will usually be set to 800 or 1600



Try to work with the widest aperture when using the long end of the zoom.
Fuji X-T10,
XF50-140mm at
140mm, 1/1250sec
@ f/2.8, ISO 1600

if it is gloomy to ensure 'freezing' shutter speeds, hopefully greater than 1/500sec. I don't start worrying about noise until ISO 6400, and ISO 800 is very clean. Aperture priority mode (A on the shutter speed dial) removes one factor to worry about compared to manual mode; though frowned upon by some, it allows you to focus more on your composition and, crucially, on pressing the shutter at the right moment.

The metering will adjust to changing lighting, meaning you don't have to worry about precise shutter speeds if something suddenly unfolds in front of you. This is especially helpful when used alongside an EVF that allows you to see live previews of any dialled-in exposure compensation. Using my previously mentioned preferred autofocus set-up, I'd also have the highest frames per second of the camera engaged to help me to get that frame or those frames that capture the action best. All together, this set-up is ready to quickly react to action whether you are prepared or caught off guard.

Travelling with mirrorless cameras

Travelling with camera equipment can often be a backbreaking experience and is one of the reasons why I first moved to the X-series. Compact and lightweight, with few downsides, it all sounded pretty good to me. When travelling by air, you never really want anything going into the hold, so everything is crammed into your carry-on for security. And with regulations continuing to constrain our allowances, this becomes a serious problem for many photographers. Mirrorless cameras, however, have flourished in this environment. I am able to carry three cameras, six lenses and an array of accessories from flashguns and filters to laptops and chargers, all

within one legal carry-on bag with room to spare. This is important as once I'm at a location I can have access to my camera gear as well as other necessities like bug spray, food, waterproofs and binoculars – the important stuff to keep you smiling, all within one bag.

There are things to be aware of. You need lots of batteries, because mirrorless cameras are more electronically driven so they require more power. And while many mirrorless cameras are excellently built, at this moment there is nothing that is as rugged as a top-level DSLR (though I've broken these before!), so give your equipment some TLC when you can.

STEP 3



AF MODE

I generally choose single point focus if I am following a particular subject, so that nothing else in the frame can distract the autofocus.

STEP 4



FRAME RATE

Burst shooting can increase your chances of capturing some fleeting action. Both the X-T10 and the X-T1 are capable of shooting at up to 8fps.

STEP 5



FOCUS TYPE

Single or Continuous? I generally choose single, so that the camera locks but doesn't follow the subject. I'll quickly refocus if required.



Wild wood

A seemingly ordinary woodland can be transformed into a magical place, as **Russ Barnes** discovers

WORDS AND PICTURES RUSS BARNES

There is a well-trodden path for many landscape photographers. Once an early interest in the land and sea begins to develop, it's perfectly natural to want to expand horizons, set about capturing iconic locations and begin building something of a portfolio. If you live in Britain, some of those locations might include the world-famous limestone arch of Durdle Door, the view along the beach to Dunstanburgh Castle, or perhaps Ashness Jetty at Derwentwater. The problem, of course, is that thousands of photographers have visited these locations before you,



The sun's rays can introduce a lovely ethereal quality



Landscape photography is your opportunity to develop a personal style



Shooting with a telephoto lens wide open can produce some lovely results

in all likelihood created something fairly special already, or simply enjoyed eminently more interesting weather conditions.

The chances of pulling off a stunning image in one visit to any given location are incredibly low. I've visited some of my favourite spots up to 20 times before I captured something worthy. I remember reading Charlie Waite's advice in this respect: 'Every time you set out to photograph the landscape, lower your expectation.' And he's right, of course. While there is nothing fundamentally wrong with developing your technique by shooting what I call 'location-centred' landscape images, you might find that it all starts to feel a little bit hollow – and the endless road miles will probably begin to take their toll, too. In my case, an inner restlessness soon sets in. What to do?

To a greater degree, I think landscape photography is your opportunity to develop something

of a personal statement and show others how you see the environment rather than simply where you have been. In this respect, my lifelong love of trees eventually became an all-consuming project. Fortunately, trees grow pretty much everywhere and, critically, are as unique as a fingerprint – no longer would I be recording locations that others would immediately recognise. Instead, I have tried to capture the character, poise and soul of these complex beings in anonymous places where only other people's imagination or memories might take them. The best part is that trees not only have an ever-changing beauty but they can also be very close to home, making them easy to get to.

Right conditions

As with any type of subject matter, mood, timing and light can alter everything, and manipulating these to our advantage is the skill of the

KIT LIST

Tilt-shift lens

A tilt-shift lens comes into its own for woodland photography. Keeping all those vertical lines vertical is preferable to using a standard wideangle lens, where distortions are likely.



Telephoto zoom

My other lens recommendation is my 70-200mm f/2.8. Again, verticals remain vertical and, at wider apertures, it allows subject separation, too.



Cable release

Shooting low ISO images using telephoto focal lengths in the gloom means using a cable release is crucial in order to avoid vibrations.

Geared head

I couldn't shoot without my Manfrotto 410 geared tripod head. It allows fine adjustments to be made easily with heavy DSLR kit on top.



Spiked feet

A tripod is an absolute must in the woods. Forests can often be dark, shaded places, even with full sun. You'll want a tripod with spiked feet for a stable platform.





The right conditions can make all the difference to a successful shot or not

landscape photographer. A typical British woodland scene can be truly chaotic and so some morning mist not only helps create the critical elements of atmosphere and depth, but will separate our subject from the background, ensuring we can see and focus on what's really there.

Inevitably, this means a lot of early starts, something I have adapted to because, while the shock of a 3am alarm call is soon over, there is nothing else like the experience of standing in a Cotswold forest at dawn while deer look on at you in nervous anticipation. Getting to understand an area well will mean that the advent of mist might become a lot more predictable than you think. I almost have a sixth sense for certain geography these days. Start by looking for natural bowls in the landscape, because it is here that mist is more likely to form. Rivers and other sources of moisture also contribute to such conditions.

Composition

It may seem easy to work with a static subject, but finding new views and stories to tell will draw on your creativity. For many aspiring woodland photographers, the issue truly is seeing the wood for the trees. So what do I look for? The first thing that usually catches my attention is the quality of

On a budget

Tilt-shift lenses are not the cheapest item in an already expensive pursuit. My wonderful Nikon 45mm f/2.8 PC-E lens costs about £1,400 new today, and, though it will last a lifetime, the price no doubt puts the idea out of reach of many people. But there are 'budget' alternatives...

Lens manufacturer Samyang makes a 24mm tilt-shift lens that is highly thought of, which I could find new for about £700. Cheaper still, at around £200, are tilt-shift adapters, which you can fit to your existing

lenses, though you do start to descend into a more random world with metering and focus confirmation with this option.

Getting really nice results needn't all be about the most expensive DSLRs either. The image below was taken with a Fuji X-E2 and 18-55mm f/2.8-4 lens, which I bought secondhand online for £620. The telephoto end of the zoom is the equivalent of an 85mm lens on full-frame, and is more than enough to keep those all-important verticals from distorting.



You don't need a bag full of expensive kit to shoot woodlands successfully

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“Woodland scenes can be chaotic, so some morning mist helps create depth and atmosphere”

available light. I find scenery particularly compelling if it has a suggestive path of light through it, or a hole in the canopy where beams punch downwards like stage lights. Either way, you need something to help guide the viewer, especially with what can be many competing elements in a frame.

In this respect, I sometimes try to ensure that there is either strong dark subject matter to the edge of the frame or perhaps a gap towards the centre where a light source commands more of the scene and thus pulls in the eye. Alternatively, I might look for side light, which will ensure that three-dimensional shapes rather than silhouettes are rendered along with texture and detail through the formation of micro-shadows.

A particular compositional approach of mine is to try to capture the relationships between trees in a wood. To this end, I rarely photograph lone trees, preferring instead to consider the interaction between groups, almost as if they were a family. As I sit here now, assessing many of my photographs, I realise that I also rarely shoot trees with their full canopy or with much sky in the frame, choosing instead to fill the entire viewfinder with a more abstract view. While some photographers might question approaches like these, I prefer to



The wood can be a magical place first thing in the morning

get in tight to my subject, ensuring that the viewer is right there with me in the heart of the forest.

To achieve all of this, I heavily favour a telephoto lens such as my Nikon 70-200mm f/2.8. This zoom, together with my tilt-shift lenses,

are my go-to options. I work hard to keep my verticals straight in a scene, and telephoto focal lengths or tilt-shift lenses are pretty much essential kit in achieving that. In addition, if you haven't got the natural element of mist to ensure

Russ's top tips

Some people might think nothing's worth shooting in the woods until autumn arrives in all its colourful glory. But the mood and character of trees is in constant flux, and you can unleash all manner of creative approaches at any time of year. Try long exposures to elicit a feeling of movement, use creative blur by selecting a narrow depth of field, pick out individual unique features in the forest, or take in a wider view. The options are endless.

Are you struggling for something to shoot in summer? Infrared demands lots of sun, so try an infrared filter like the Hoya R72 and experiment. I've found it a very attractive and challenging alternative to conventional landscape photography.



Multiple exposure

It may not be immediately noticeable but this is a blended multiple exposure. The effect can be achieved in-camera or by blending layers in Photoshop. I wanted to create an almost impenetrable feel; it's not something I use often but it can be very effective if done with subtlety.



Manipulating bokeh

Early rain had left the branches of every tree covered in water droplets and when the light shone through, the woodland lit up with a million jewels. By using a long focal length and f/2.8 aperture, the soft bokeh turned the droplets into thousands of tiny highlights in the frame.



'Backwater VIII':
pools of water in
a local woodland

Unleash your creativity

I've been known to break with what many might consider to be conventional techniques in landscape photography and look for something different. In my view, this is an important part of developing a photographer's artistic vision.

I established a new project earlier this year titled Backwater. For this, I looked specifically for pools of water in local woodland where I could combine my love of trees with reflections, infrared and a narrow depth of field, in order to develop something that was visually interesting and as unusual as possible.

This approach really fired my enthusiasm and I was quickly hooked by these more abstract

images that resulted, such as the one above, which hopefully show that not every photographic method and result has necessarily been considered or done to death. Some of these photographs I likened to mini galaxies of life, and I used that imagination to drive the idea.

If I said, 'Think of a tree,' there is a picture almost everyone will have in their mind: probably a straight trunk with branches and leaves, a view anyone could identify with. Trying to think and see outside of that depiction can actually be really challenging, but once you do achieve it, you open up a world of possibilities to create something that's photographically different.

subject separation, dropping your aperture to f/4 or f/2.8 at telephoto lengths will help to ensure that the background softens considerably. Not all landscape photography needs to be shot at f/16 with endless depth of field!



Shoot infrared

During the past two years, I've developed a strong love of infrared, lately using a fully converted body. It's an approach that is perfect for summer days with harsh light, and works best around green foliage where dynamic contrasts can be developed in the image.



Creative blur

I use creative blur as a method of really hammering home where I want my viewer to look in the photograph. Using the tilt function of tilt-shift lenses at wide apertures is fantastic for this and allows you to plant a horizontal or vertical plane of focus where it has most impact.



Find strong features

There's usually something out of place in even the most ordered of woods, so finding and developing those features as the 'story' can make for very striking imagery. I used to find the imperfection of landscapes problematic in my mind; now I do everything I can to seek it out.

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My first drone flight

The technology may be fairly new, but drones are already changing the way we capture both images and video footage. Will our newcomer to the process get off to a flying start?

WORDS AND PICTURES **RICHARD SIBLEY**

It seems that the press prints negative stories about drones almost every day. It's almost as if there's an agenda to demonise this technology, and if you are to believe some of what you read, anyone who flies one is either a peeping tom or a terrorist. While there have been individual cases that can be highlighted as examples, they are very isolated incidents. By and large, most drone enthusiasts simply love flying remote-controlled devices, and for photographers and videographers, they offer a whole new perspective on the world.

While the technology employed by drones may be new, the idea of flying

a remote-controlled device for photography or filming has been around for years. It's certainly a little odd that people single out the term drone, or quadcopter, without ever thinking that radio-controlled helicopters have been around for decades. As with any new technology, there are those that find it exciting and those that fear it.

And so it was I recently found myself flying a drone for the very first time – with no little concern that I would be labelled a pervert or terrorist. I was certainly filled with more trepidation than jubilation. However, perhaps this fear was a healthy one. I wanted to be sure I

Shot from the drone, Richard and his brother Rob prepare for take-off

would be flying safely, that I knew how to control the drone, and that I wouldn't be endangering anybody in the process.

The drone I would be flying was the DJI Phantom 3 Professional. It is a pretty good drone for a first-time flier to use, thanks to its simple interface and safety features. In its default mode, it won't let you fly too high or too far, and take-off and landing is as simple as pressing a button. Battery running flat? The Phantom 3 Pro will start beeping at you and flashing red on the controller. When the battery drops to a critical level, it will automatically return to its take-off point and land.

Despite these safety features, I was still nervous. I pored over the instruction manual, I watched YouTube videos, I downloaded the DJI Go app, which is used to fly the DJI drones, and made sure that



I was familiar with all the procedures. When I saw people on YouTube flying them, I grew a little in confidence. It all seemed very easy, but despite these reassurances, I just couldn't shake that uneasy feeling.

The most obvious piece of safety advice there is when it comes to flying a drone is to operate it in a wide, open area where you can keep it in your sights at all times. This vital rule cannot be repeated too often. For my maiden flight, I opted to visit a large expanse of beach, at low tide, at 5.30 in the morning. The long beach and vast stretches of sand would give me plenty of space and an unbroken line of sight of the drone, and at that time in the morning it was going to be easy for me to make sure I was more than 50m from 'a person or vehicle not under my control'.

Clear for take-off

Setting up the DJI Phantom 3 Professional is straightforward. The propeller blades are screwed on to the motors, the 1440Mah battery is inserted, which should give you around 25 minutes of flight time, and the drone is then switched on. On the controller, you attach a smartphone or tablet via a USB lead and open the DJI Go app. When the app loads, it connects to the controller and to the Phantom 3 Professional drone, then performs a series of checks. The most important of these is the compass and

KEY SPECS

SENSOR 12MP
VIDEO 1080p or 4K
STABILISATION 3-axis gimbal
LIVE VIEW Via app
PRICE £1,159
FLIGHT TIME Around 23 minutes
WEIGHT 1,280g
STORAGE 16GB Micro SD included



Richard took the drone to a height of 98m before feeling uncomfortable

GPS calibration, which allows you to check the drone's current location on a satellite map, as well as the altitude you are flying at.

Meanwhile, you can look at a first-person view of where the drone is flying via the drone's built-in camera. This can capture 12-million-pixel still images, or record video up to 4K in quality. This footage is saved to a micro SD card on the drone's camera, and of course, the camera is stabilised thanks to a motorised gimbal. The footage is very, very smooth indeed.

All that was left to do was slide the onscreen button for take-off, which I did. Seconds later, the motors powered up and the drone flipped upside down on to its propellers, sending sand flying everywhere. I scrambled to press a button on the remote to 'land it' and switch off the motors. Needless to say, this wasn't quite what I had expected, and only served to make me more nervous.

A quick inspection of the propellers made me realise that one of them was cross threaded. In effect, it was loose, and wasn't being powered at all by the motors. Thankfully I had some spare blades and, after replacing it, I was ready for take-off, more anxious than ever. This time, however, it was a success.

The DJI Phantom 3 Pro took off gracefully and just hovered in position at about chest height in front of me.

It was quite surreal to see it just floating there on its own for the first time. Even light gusts of wind did nothing to move it, with the motors very quickly correcting for any slight movement. Think of it as being the drone equivalent of image stabilisation in a lens.

I had already been practising the controls, and it turns out that years of playing computer games as a teenager can actually be quite useful, as it took me just a few minutes to become fluid with the drone's operation. All of this flying practice was carried out at a height of no more than about 10m, and at around 20m in front of me.

As I became more confident, I was happy to increase the altitude and fly a little further, always maintaining sight of the drone. I quickly realised that I had a definite comfort zone when using it. When I started to feel as if it was heading too far away from me, I was straight back on the controls to bring it back closer, and I tested the 'fly home' feature very early on. It was reassuring to have the Phantom 3 Pro land only about 50cm from where it took off.

In terms of altitude, I did at one point take it to about 98m, but even this started to feel uncomfortable. I certainly didn't feel confident enough to push it to its maximum altitude of 120m, even though I was in the middle of nowhere and a long way from any





“At the very moment when I began to get comfortable, I spotted that my iPhone battery was about to die...”

flight paths. I can only describe it as being like the feeling you get as a child when you fly a kite too high in the sky and feel the need to reel it back in. I got that same feeling, but without any string and only an invisible radio connection, it is a little more nerve-racking.

Then, at the very moment when I began to get comfortable, I spotted that my iPhone battery was about to die. Just as I was about to bring the drone back home, my phone went dead. ‘Here we go. This is where it flies off and I end up on the local news,’ I thought to myself. But, thankfully, the Phantom 3 behaved just as it was designed to, and once again automatically returned home to land at my feet. It really is a very impressive bit of kit.

Stills and video

My reason for wanting to try out a drone was, of course, to see just what it was capable of in terms of taking photos and video. Previously I have been impressed with some of the videos I’ve seen, but in an age of low-level satellites, aerial photography has never really excited me. However, I have to admit that you do get a very different angle on the world with a

drone, as you can fly at levels that were previously unobtainable – far lower than a helicopter. I’d say the view is more akin to that of being up in a tree, and it is shooting at this sort of height that I found creatively really interesting. It was a very different way of viewing the world.

Funnily enough, it is a similar story with video. Flying high and looking at a vista is nice, but it is actually when you are flying smoothly and filming just 3-10m above the ground, capturing footage that again previously would have been very expensive to capture, is where it becomes incredible. I flew it quite low across a rocky beach, along the line of the tide, with the waves rolling in and out, and the footage has a cinematic quality to it because these types of shots traditionally have huge production values. For those shooting video it is extremely exciting technology.

Image quality

With only a compact-camera-sized sensor, the image quality of the Phantom 3 Pro is never going to be groundbreaking. The results do suffer from blown-out highlights, and there is some rolling shutter when shooting

The camera on the Phantom 3 Pro is very good given its size. It can save DNG raw files and shoot 4K video

video, particularly 4K footage when strafing quickly from side to side. However, if you spend a bit of time learning how to expose the scene correctly, then there’s a lot you can do in post-capture, particularly if you shoot the video with a very flat image style. There is also a ND filter available separately for the Phantom 3 camera, which helps to achieve a slower shutter speed for more natural-looking footage. And the good news for stills photographers is that images can be saved as DNG Raw files.
www.dji.com/product/phantom-3

Conclusion

Once my nerves had calmed down and I had established my own comfort zone, I had a lot of fun with the DJI Phantom 3 Professional drone. It’s easy to fly, and the footage is impressive. It’s addictive, too. I went straight home to charge the battery to go out again the next day, once again, very early, on a different beach, when no one would be about.

With all the hysteria that exists around the subject of flying drones, it is important to remember that there’s always a human being behind them, the vast majority of whom are going to be averse even to pushing the drone to its preset limits. There are rules set out by the Civil Aviation Authority, as well as advice from the police, but for the most part it all comes down to common sense. Be sensible, be safe, and there really shouldn’t be anything to fear.

For further information, visit www.caa.co.uk/uas

The image quality of a DSLR in a light, portable package

Sony A7R

WWW.PANASONIC.COM/UK/

The A7R, and its stablemate the A7, were Sony's first compact system cameras to feature full-frame sensors. Light, and yet surprisingly robust, these retro-looking models (launched in October 2013) offered huge pixel counts in almost pocketable bodies, combining the portability of a compact with the image quality of a DSLR.

The two cameras have a lot in common – when placed side-by-side, they appear almost identical – but for many the A7R has the edge. This little CSC has a 36.4MP sensor and no anti-aliasing filter, resulting in super-sharp images with bags of detail. (The A7, with a pixel count of 24.3MP, needs to keep the anti-aliasing filter to help prevent moiré.)

Other notable highlights include a respectable electronic viewfinder with 100% coverage; a tilting LCD screen that can be moved 84 degrees upwards and 45 degrees downwards; and full-HD video with a satisfying number of manual controls.

On the flipside, the A7R relies on contrast-detect autofocus, which for the most part is perfectly adequate (Sony even claims this version is 35% quicker than standard contrast-detect AF systems), but it still struggles in low light. By comparison, the A7 uses both contrast and phase-detect technology.

Five lenses accompanied the launch of the A7R: two mid-range zooms, two primes,



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and a telephoto zoom. In addition, the camera is able to accept almost any 35mm lens via specially designed adaptors. Since 2013, Sony has added more lenses to the

line-up, but not quite the 15 it originally planned.

The arrival of these CSCs was a real watershed moment: at last serious enthusiasts and pro-shooters were being presented with a 'compact' promising image quality to genuinely rival bulkier DSLRs. Sony, as ever, had pushed the boundaries, and this time the venture had paid off.

What our test said

'In terms of its raw feature set, there's no arguing that the Alpha 7R pretty much outstrips every other CSC on the market. The 36.4MP full-frame sensor is more in keeping with a high-end DSLR than a CSC, and it delivers resolution performance akin to the Nikon D800 rather than its direct competitors.

The only major issue is with regards to the lens line-up. There's the promise of a further selection of lenses next year, although the current range is somewhat limited. You're better off investing in one of the available adaptors and utilising third-party lenses in conjunction with the body.'

PROS

- Full-frame sensor in compact body
- Impressive video specification
- Superb, high-res image quality

CONS

- Limited native lenses
- No external charger
- AF system contrast-detect only

Camera GOLD

How it stacks up today

Sony recently launched the A7R II, a 42.4MP compact system camera with a full-frame, back-illuminated sensor (see our review on page 68). This new addition includes both phase-detect and contrast-detect elements, which should silence critics of the A7R. These advances do come at a cost, however, with the A7R II retailing at £700 more than the current street price of its predecessor, so if super-fast autofocus isn't your main concern, the A7R is still worth considering.

Alternatives

Both the Nikon D800 and D800E offer 36.3MP full-frame sensors, but the bulk and weight might be an issue for travel and wildlife photographers. Likewise the Canon EOS 6D and Sony SLT A99 are affordable, if weighty, options. But if portability is your priority the Olympus OM-D EM-1 is a good alternative.



In the range

How the A7R fitted in the range



KEY SPECS

SENSOR 36.4MP full-frame CMOS
ISO 100-25,600
BURST MODE Up to 4fps
MOVIE Full HD 1920x1080
DISPLAY 3in, 921k-dot TFT, tilting LCD
DIMENSIONS 127x94x48mm
WEIGHT 465g

The Sony A7 and A7R Two users give their verdicts

Brian George

MILAN, ITALY

My first camera was a Pentax MV with a 50mm f/2 lens. My interest was developed by going through boxes of pictures that were made by my uncle. They were black-and-white pictures of his travels done with a Rolleiflex 6x6. I was immediately hooked.

The subject that interests me most is people, whether they are posing for a picture or I'm capturing them in a spontaneous way. People and their behaviour can be fascinating.

I chose the A7 because I liked the look of the pictures I saw that had been taken with it. Two other major considerations were the price – it was absolutely the best value for a full-frame camera – and the fact that you can use vintage manual-focus lenses with an adaptor. And I love vintage lenses!

I always shoot in manual, so manual focusing and exposure. I only use vintage glass. JPEG is all I need, as they have enough dynamic range.

The image quality is excellent, but I do have a couple of niggles – the shutter lag when you are not shooting with the electronic shutter and the loud shutter sound. Also the battery life is not great (I always carry spares).

If I were to give anyone advice about photography, I'd say take lots of pictures and analyse them. Learn from your mistakes. Be very critical of your own work and try to do it better the next time you go out shooting. Just go out and shoot!

Permajet says: 'Brian would benefit from printing his images on PermaJet's NEW FB Satin 310gsm, which would draw on the subtle textures and tones in his photography.'



1 Verona, Italy

The ubiquitous selfie stick...

Minolta MD W Rokkor 35mm f/2.8, 1/640sec @ f/5.6, ISO 100

2 Verona, Italy

A simple portrait of a man in the street.

Yashica ML 50mm, 1/800sec @ f/5.6, ISO 100

3 Monaco

I like to call this image 'Tailgate'.

Minolta MD 50mm f/1.7, 1/1000sec @ f/5.6, ISO 100



Dennis Berggren

ÄLMHULT, SWEDEN

I started taking pictures three or four years ago when I was travelling quite a lot with work. I thought it was a shame not to capture these places in a good way. My first camera was an Olympus PEN E-P3 that I bought together with the 17mm and 45mm primes. It was a really nice camera.

I then used a Nikon before switching to the Sony A7R, which I chose for the size and the image quality. Being able to use my Nikon glass also helped.

I love shooting landscape and architecture. I can't explain really why, but there is something about the beauty in these subjects that I love to capture. As I tend to use quite a lot of long exposures in my photography, I feel that it adds to a more timeless feeling of these subjects.

I shoot only Raw. The dynamic range is truly amazing and I need every bit of it. I only need two shooting modes, A and M. Obviously I shoot a lot in Bulb mode, too.

The best feature of the Sony is its fantastic image quality. The amount of detail I can recover from the shadows is amazing. The quality of the glass is outstanding as well.

If I could change anything, though, it would be to have customisable menus. Now, with the A7R II, having access to more custom buttons helps a lot. Also, I would like the ability to shoot 3-5 minutes without Bulb mode, and to be able to see the image develop in bulb mode.

PermaJet says: 'Bold colours and pastel-like landscapes are reproduced perfectly on PermaJet's recently upgraded FB Distinction 320gsm – a bright white, exhibition-quality media that suits a varied style.'



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1 Peek-a-boo balconies, Copenhagen

This quirky building in Denmark is a home for older people.
Nikon 16-35mm, 112 seconds, ISO 100

2 Manhattan Skyline II

The classic NYC skyline, taken from the Jersey waterfront.
Zeiss 24-70mm at 24mm, 179 seconds @ f/13, ISO 100



3



4



3 Foggy fields

Only the second photo taken with my new favourite combo, the A7R II and Zeiss Batis 25mm lens. The city in the background is my hometown of Älmhult, Sweden.
Zeiss Batis 25mm, 20 seconds @ f/2, ISO 100

4 The dark mountain

It was a crazily windy and rainy day on the Croatian island of Vis. Seconds after I took this shot, I was soaked in water from the waves, even though I was around four or five metres up on the cliffs!
Zeiss 24-70 at 24mm, 101 seconds at f/14, ISO 100

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All at sea

When it comes to drama, natural beauty and sheer variety of subject matter, the coastline is hard to beat as a photographic location

WORDS AND PICTURES **LEE FROST**

The sea has always held a special place in my heart. I still have fond memories of childhood holidays on the Lincolnshire coast, building miniature fortresses in the sand, searching for crabs in shallow rock pools, flying kites on the breeze and listening to the gentle lapping of waves on the beach.

The coast is also the place where I cut

my teeth as a photographer. During my teens, I patrolled Torquay seafront in search of candid subjects – pensioners snoozing in deckchairs, funny drunks posing for the camera, kids splashing in the sea. I also discovered the joys of night and low-light photography, shooting floodlit fountains, illuminations on the pier and neon signs outside bars and clubs.

For the past decade, I've lived by the sea in Northumberland, honing my craft as a coastal landscape photographer on its beautiful beaches, rocky inlets and tranquil estuaries. When you live somewhere long enough you get under its skin, tune in to its moods and feel like you belong. The ebb and flow of the tide, changing seasons and weather patterns become a natural part of daily life and outings with a camera are dictated by these factors – as well as the images that result.

What keeps me inspired more than anything is the variety of subject matter that the coastline presents – from dramatic views to small details, busy harbours to sandy beaches, natural beauty to manmade wonders. Come rain or shine, you will always find something interesting to photograph and it's almost impossible to return home without a few great shots.

Kimmeridge, Dorset. The soft colours of dawn and dusk bring out the atmosphere of coastal views.
Canon EOS 1DS Mk III with 24-70mm zoom, 0.6ND grad, 15 seconds @ f/22, ISO 50

Bamburgh Castle,
Northumberland. This
is the kind of effect a
10-stop ND filter gives.
Canon EOS 1DS Mk III,
70-200mm, 147 seconds
@ f/22, ISO 100



Tip 1 Time and tide

Try using long exposures to record motion in the sea and sky. I do this using a Lee Filters Big Stopper 10-stop ND filter, which slows exposures down to several minutes, even in the middle of the day. The resulting images have a surreal quality. The sea is smoothed out, clouds record as delicate streaks and static elements such as piers, jetties and rocks stand out starkly. Windy days are best, as you get lots of movement in the sky, though dull,

overcast weather can also produce beautiful results, especially if you convert the shots to black & white. A 10-stop ND filter is almost opaque, so compose the shot and focus the lens manually before fitting the filter to your lens and set the shutter to Bulb. If the correct exposure without a 10-stop ND filter in place is 1/30sec, the exposure you need to use is 30 seconds, 1/15sec becomes one minute, 1/8sec becomes two minutes and so on.

Dungeness, Kent. Convert
to b&w to add drama.
Canon EOS 5D Mk III,
17-40mm, 1/160sec
@ f/11, ISO 100



Tip 2 Mono magic

Although your first instinct may be to shoot the coastline in colour, the right scene can work even better in black & white, so don't be afraid to convert it later. If the weather is rather flat and grey, this can be particularly

effective – a colour shot will look boring, but in black & white you can produce stunning images in any conditions. I use Silver Efex Pro for b&w conversion – the Contrast and Structure controls are ideal for adding drama.

Tip 3 Closed for winter

There's a quaint sadness about seaside towns out of season, boarded up and forgotten for months on end. They have the air of a ghost town, drained of colour and laughter, slightly forlorn and rough around the edges. However, that's exactly what makes them so inspiring, so don't limit your seaside visits to the summer months – get some dates in your diary for December, January and February.



Tip 4 Inspiring harbours

If beaches don't do it for you, head for the nearest harbour. No matter what the weather's doing, you can always find things to shoot, and even on the dullest, drabest days, a quaint old harbour will keep you busy. Piles of rope, fishing nets, lobster pots, peeling paint, rusty chains, old boats, painted signs, reflections – there are endless subjects and all can be the source of great images.



Tip 5 Weather or not

I love stormy weather as it reveals the raw power of nature. There's always the risk of a soaking from falling rain and pounding seas, but the images can be magnificent. Use a waterproof cover to protect your camera, and fit an ND grad to your lens to darken the sky. To check the

forecast, try www.metoffice.gov.uk, www.metcheck.com, or www.xcweather.co.uk – there's no point heading out for sunrise if 98% cloud cover and heavy rain is forecast. During the day you can watch the weather change, so if you're out you might as well make the most of it!

Brighton, East Sussex.
Canon EOS 5DS R,
24-70mm, 1/400sec
@ f/8, ISO 100



Tip 6 Life's a beach

I love wandering along beaches, enjoying the view, looking for things to shoot. Ripples in the sand are a constant source of inspiration as they come in so many shapes and forms. I love the play of light on wet ripples; it adds a silvery sheen that contrasts with the darkness of the sand to create amazing patterns. Ripples also make great foreground in broader views and by getting low and close with a wideangle lens you can emphasise the shapes of the ripples nearest to the camera so they add scale and lead the eye into the scene. Reflections in rock pools are great for abstracts; flotsam and jetsam for details and textures; driftwood as natural sculptures; the skeletal remains of dead fish; love hearts drawn in the sand... there's always something interesting to shoot!

Mangersta, Outer Hebrides.
Storms suit coastal images.
Canon EOS 5D Mk II,
17-40mm, 1/2sec
@ f/22, ISO 50



Tip 7 Check the tide times

Knowing the state of the tide when you intend to visit a location can make a big difference to the photographs you take, so either get hold of a tide table for the area or check a website such as www.bbc.co.uk/weather/coast/tides/. If you want to capture ripples on a sandy beach at dawn or dusk, for example, the tide needs to be receding so the sand's still wet and the ripples are fresh, but for waves crashing against the shore, high tide tends to be more dramatic. There are also serious safety implications – you don't want to find yourself cut off by an incoming tide.



Embleton Bay,
Northumberland, at dawn.
Canon EOS 5D Mk II,
17-40mm, 1/6sec
@ f/11, ISO 100



Tip 8 Make the most of light

Sunrise and sunset can be stunning as the vibrant colours in the sky are reflected in the sea, rock pools and wet sand. The first and last 30 minutes after sunrise and before sunset also produce beautiful golden light in clear weather and long, raking shadows, so it's worth rising early and staying out late. A recce will determine if dawn or dusk is best for a particular location – don't assume that

you can't get decent sunsets on the east coast or sunrises on the west coast; you can! Sunny, blue sky weather is the least effective for coastal views as the light is bland and harsh, but you can capture details and textures, or shoot infrared images with a converted DSLR or IR filter. Dull days are also good for detail shots and long-exposure seascapes (see Time & Tide, page 52).

Tip 9 I'll be back

Although we have thousands of miles of coastline around Britain, there's a lot to be said for returning to the same location time and time again so you get to know it intimately and can really make the most of its photographic potential. Andrew Nadolski did this by visiting and photographing Porth Nanven beach in Cornwall over a 10-year period and published a fantastic book of his work, *The End of the Land*. The images are well worth checking out either in the book if you can get hold of a copy or on Nadolski's website (www.nadolski.com) as they provide a fascinating insight into what can be achieved, photographically, on one tiny beach. I've never invested that amount of time in photographing one location, but I've lived very close to Alnmouth beach on the Northumberland coast for over a decade and find it incredibly satisfying to simply go for a wander with a camera – any camera – and take photographs of anything that catches my eye.

Bamburgh,
Northumberland. If you
live near a great location,
make the most of it.
*Canon EOS 1DS Mk III,
17-40mm, 8 seconds
@ f/22, ISO 50*



Dunstanburgh Castle, Northumberland. There are many iconic scenes on the British coast. Canon EOS 1DS Mk III, 17-40mm, 4 seconds @ f/22, ISO 50

Tip 10 Classic views

The most dramatic coastal images tend to be those that adhere to the traditional principles of landscape photography – wideangle lens, foreground interest to add depth and lead the eye into the scene, front-to-back sharpness, a focal point to give a sense of scale and good light to bring out the character of the scene. It's a simple formula to follow and provided that you don't miss out any of the above factors you'll be guaranteed great shots. I shoot most of my coastal landscapes at focal lengths (on full frame) of 24mm or wider, though I find the wide end of a 16-35mm zoom is ideal for emphasising near foreground and creating a dramatic sense of perspective and depth.

Tip 11 On the rocks

Rocks are full of wonderful patterns, texture and colours and are great for detail shots. Look for sedimentary swirls and soft curves in rocks that live below the high tide mark and course textures in those that stay above water but receive a pounding from the elements. Pebble beaches are another great source of patterns – look for groups in different sizes and colours and capture them in the soft light of an overcast day. I use a 24-70mm for rock details: it allows me to focus close and fill the frame with small areas.



Tip 12 Optical options

Although you're more likely to use wideangle lenses to capture the coastline, don't discount a telephoto or telezoom, too – in some situations it can work brilliantly. If you want to capture the sun's orb at sunrise or sunset, the longer the lens the bigger the sun will be. You can also use a telezoom to home in on interesting parts of a scene, or to compress perspective so the elements in the scene appear crowded together.

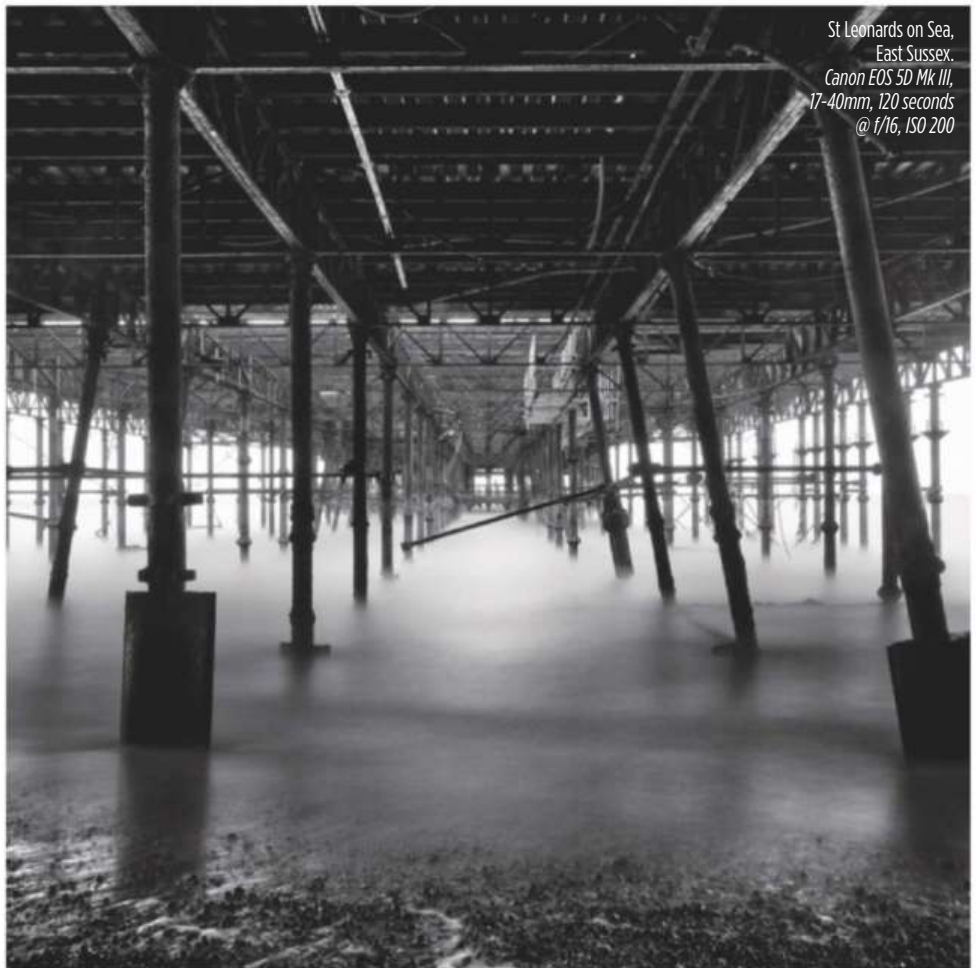


Alnmouth,
Northumberland.
Canon EOS 1DS Mk III,
24-70mm, 1/2sec
@ f/22, ISO 100

Tip 13 Stretching the truth

With its uninterrupted views, the coastline lends itself to panoramic photography. You can either shoot a series of images then stitch them – I use Photomerge in Photoshop – or

shoot a single frame with your widest lens then crop the top and bottom off. The latter option is fine if you're not making big prints, but stitching is better for ultimate quality.



St Leonards on Sea,
East Sussex.
Canon EOS 5D Mk III,
17-40mm, 120 seconds
@ f/16, ISO 200

Tip 14 Piers of the realm

There's something quintessentially British about the traditional seaside pier, stretching gracefully into the sea. Photographically, they also offer lots of creative potential. How about standing underneath the boardwalk so you can capture the legs and struts criss-crossing in silhouette with the sea and sky in the background, or shooting from one side to

reveal the pier's ornate structure in profile? In both cases, a long exposure can be used to blur the sea and sky so the pier stands out (see Time and Tide). On the pier itself, stand in the centre of the boardwalk at one end and shoot towards the other, using the converging lines to create a strong composition that carries the eye through the scene.

Downsizing from an Alpha 77

DAVE G 4 0

Q I've had my Sony A77 for almost three years, and have truly loved owning it. Lately, though, it hasn't been having the wow effect it once did, and the size of it and number of lenses I have, have caused me to look elsewhere. Having seen a Panasonic GX7 in the field, the latest offerings by Olympus and other non-Nikon/Canon manufacturers, and the high acclaim that both the Panasonic FZ1000 and Sony RX10 bridge cameras have received, I've realised that you don't have to have an enthusiast size DSLR/SLT in order to get brilliant image quality and great noise control/bokeh. I've also stepped down

from taking full time football photos for a local club, and never used the 12fps burst rate very much anyway. So I'm looking for a smaller camera, with a decent viewfinder, fast focusing, great image quality and noise control etc. The GX7, Olympus OM-D E-M5, E-M1 and E-M10 all look great, as do the aforementioned bridge cameras of which the Panasonic seems to just outshine the Sony. I feel that Canon and Nikon are behind on the CSC front, and high-end bridge cameras. Am I right in thinking that as well as better noise control the Olympus models mentioned would improve on image quality while being a lot smaller?

A I consulted some sensor test data for the Alpha 77 and OM-D E-M1, and in most categories *there isn't much to choose except that the E-M1 offers more dynamic range.*

On paper, the larger APS-C sensor of the Sony should easily outperform the E-M1's Four Thirds sensor, but the A77 compromises the sensor thanks to its fixed SLT mirror. So you won't see a radical improvement in image quality with an

E-M1 over your A77, but the size difference and choice of excellent and up-to-date lenses is significantly in favour of any Micro Four Thirds camera. IB



The Olympus OMD EM-1 is more compact and has excellent lenses

Milky Way and star trails

LONDON BACKPACKER

Q I want to have a go at photographing the Milky Way and also try some star trails but I'm not sure the lens I have will work. I have the normal kit lens (18-55mm) and a 35mm f/1.8, which is my main lens on my Nikon D5100.

I was wondering if one of the cheaper 8mm Samyang/Rokinon type lens would be a better choice. I know they are not that fast at f/3.5, but it seems that most pictures of this type are taken with a 12-16mm lens.

A For star trails, don't be concerned about the speed of a lens for this kind of photography. Star trail photography requires combining long exposures of 30 seconds or more and in my experience at ISO 200 you will need an

aperture of around f/5.6 or even smaller (bigger f-number). With Milky Way shots it's a different story. You don't want to expose for longer than about 30 seconds or the rotation of the Earth will start to show and blur the sky details. You will also need a much higher ISO setting and use the widest (smallest f-number) aperture you have. Using f/2.8 at 30 seconds using ISO 3200 is a good guide – so if you use f/3.5, you will need ISO 5000 (two-thirds of a stop extra). You can get star trails with a kit zoom lens but the images will be much more dramatic with a wider-angle lens, and the wider the better – while a fisheye would, in my opinion, be the best. But the Samyang/Rokinon would be very much up to the task. IB

Better alternative to a Canon EF 70-300?

OLIVER X 6 6 9

Q I'm using a Canon EOS 7D Mark I, and for long reach I use the Canon EF 70-300mm f/4-5.6 IS USM. I'm pleased with it, except that the rotating front end and lack of full time manual focus can be a bit of a fiddle, especially when using filters. I'm considering buying the Tamron 70-300mm f/4.5-5.6 Di VC USD as an alternative and I'd value opinions on this against the Canon lens especially in terms of image sharpness. I have the Tamron 24-70mm f/2.8 Di VC USD which I think is fabulous and wonder if the 70-300mm is comparable in terms of overall image sharpness?

A To be frank, unless you are willing to spend a lot more for an L-Series or comparable lens, you are unlikely to get a significantly better performer than the Canon EF 70-300mm f/4-5.6 IS USM. However, the Tamron SP AF 70-300mm

f/4.5-5.6 Di VC USD does answer your concerns about aspects of the budget design of the Canon lens without sacrificing image quality. So the Tamron is not an outstanding lens, but you should be happy with its performance if you are already content with your Canon lens and you will undoubtedly be less frustrated when you're using it. IB



The Tamron 70-300mm is a good performer

What's the point of a DSLR (these days)?

QUILKIN

Q This question has been asked many times, but I suspect most of the answers I have found are out-of-date now. My daughter has asked for a DSLR for a birthday present (she has used one briefly for work) but I think she'd be better off with a good compact or bridge camera with an electronic viewfinder.

So, with new compacts such as the Sony RX100 series, with good lenses, fast shutter speeds, fast shooting speeds and decent-sized sensors, are there any real advantages of a DSLR these days? I ask having used film SLRs for years in the past, but gave up because they were too heavy to lug around.

A The market for DSLRs is now pretty flat or even shrinking and there are only two main players left – Nikon and Canon – with Pentax representing a relatively small presence. Even Sony had to try something different with its SLT translucent fixed

mirror DSLR alternative. That said, DSLR sales haven't collapsed as many had predicted just a few years ago and, in value terms, DSLRs still dominate the 'serious' camera market and remain the primary choice for action (sports, nature and press) photographers. But there is no getting away from the fact that bridge, premium compact and mirrorless system cameras are eating into DSLR sales from many angles. For most of us now there is very little concern about basic image quality, even from premium compact cameras. Issues such as functions, features and portability tend to be the highest priorities. More discerning photographers work out what they

can and can't do with specific camera models and will choose what suits them best in terms of what the camera can do and how much it costs. This consideration no longer automatically leads to the choice of a DSLR, or at least it shouldn't – though many, like your daughter, do still assume a DSLR is the be-all. Even Canon and Nikon recognise this and they both now have growing mirrorless camera systems and serious bridge and premium compact models. **IB**



The RX100 is a superb premium compact

Beginner looking for advice on camera to buy for GCSE photography

RUBY

Q I am only 14 years old, yet I aspire to take amazing photographs, so I will be needing to buy a camera.

I am about to start a GCSE photography course at my secondary school and would like to take pictures of landscapes and wildlife, mainly leaning towards the wildlife side. What I truly love is very focused black-and-white photos which are wide and low and very inspiring. Can anyone recommend a good starter camera/kit? My budget is £200-ish and below. (I am also prepared to buy secondhand if it means I'd get better value for money).

I also love the Polaroid-type pictures. Fujifilm's Instax has caught my eye, but considering the price I'm paying, I don't know how good the photo quality is and if it is any good when it comes to capturing wildlife and landscape shots. I might buy an Instax camera as well as a more serious camera for taking better-quality photos. Please recommend any good cameras for beginners.

A Good luck with the GCSE course – it should be a lot of fun! Starting with your interest in instant cameras like the Instax, these are great for

social photography but there is no way of producing high-quality images from cameras like these – even if you scan the rather small prints. For much the same reason they aren't much use for landscapes or wildlife. I would aim for a good quality compact camera and the Sony Cyber-shot HX60V comes to mind. It was a £300+ camera over a year ago but it's now available for just a little over £200. It's a solid, stylish camera with great image quality for its class and although it doesn't have an eye-level viewfinder, you can add one if you find you need one. **IB**

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Canon 5D Mk III or Nikon D750 or...?

GEORDIE BOB

Q I am looking to buy a good quality camera as I contemplate my spare time in retirement (in the next two years). I've always been a Canon guy but I'm torn between a Canon EOS 5D Mark III or waiting for the Mark IV, or looking at a Nikon D750. Any help or advice most welcome.

A There isn't much sign that there will ever be a 5D Mark IV, now that

Canon has unveiled the 5DS and 5DS R. The Nikon D750 is full-frame, like the 5DS, but significantly cheaper for a number of reasons. The 5DS has a 50MP sensor with more than double the resolution of the Nikon D750's 24MP sensor. The 5DS also boasts more AF

points and considerably more cross-type points. You also get to go as fast as 1/8000sec with the 5DS shutter compared to the D750's top speed of 1/4000sec. Image quality-wise, the D750, with its more sensitive but lower resolution sensor, does deliver better high ISO noise and dynamic range but both are at the top end in

these respects. Finally I do hear from so many retired photographers and not a few youngsters who aren't happy about how large and heavy their DSLRs are, so you could also consider the growing range of relatively tiny and featherweight Sony Alpha A7 full-frame mirrorless bodies now available. **IB**



You could go for a Canon or Nikon DSLR, or a Sony mirrorless model

Upgrading from a trusty compact

RALPH EDWARDS

Q I am writing for some advice on buying my next camera rather than going to my local camera shop where they would probably push me towards what they prefer to sell. I am after quite a versatile camera. My trusty Panasonic compact has served me well over the years but I really need to push forward towards the bridge or DSLR ranges. I'm thinking bridge due to the expense and I don't want to purchase additional lenses, etc. If honest, I use the auto functions rather than setting everything up myself. I am mad about planes, trains and automobiles so I guess that's a good starting point for my needs. I do like air shows so really need a quick-focusing mixed light piece of kit with a fabulous zoom lens. I also love to take landscape images, often enlarging them up to A3 size to frame and hang on the wall.



A Everything you say points towards a good quality bridge camera, one of the latest generation featuring a

relatively large 1in sensor so you can have better confidence in printing up to A3. There are two main contenders: the Panasonic Lumix FZ1000, which would offer some familiarity in terms of usability compared to your old Panasonic compact, and Sony's Cyber-shot RX10. The only missing variable is your budget and for either of these you will need around £600. **IB**



The RX10 and Lumix FZ1000 offer great image quality up to A3 size

Next month



© LEE FROST

Gold rush

As we head into the most photogenic season of the year, we reveal how to shoot your best autumn pictures ever

Olympus E-M10 II

Better image stabilisation, 2.35-million-dot electronic viewfinder, 4K timelapse video and silent shutter mode – just a few of the upgrades to this popular model



Home to roost

Millions of birds gather to roost across the UK at this time of year. Here's how to make the most of their photographic potential

Panasonic FZ330

The superb superzoom bridge camera – complete with 4K capability

On sale
23 October

The 5 best CSCs under £500



So you've worked out that you have a budget of up to £500 to spend on your next camera, but you're not entirely sure what makes the best buy. Fear not, as this month we've rounded up five of the finest mirrorless models from Canon, Olympus, Fujifilm, Panasonic and Sony to make your decision process that little bit easier.

There are many benefits of choosing a CSC ahead of a more conventional DSLR, but ultimately it's all to do with size. If you know you'd like a small, light camera that accepts compact lenses and doesn't take up too much space in your bag, a CSC is definitely the right choice for you. Many manufacturers have developed their own styles, too, so you'll want to ask yourself whether you want your CSC to have a modern or classic retro appearance.

Turn over for our rundown of the **BEST 5** on the market...

Key points of a CSC under £500

Lens range

Before splashing out, make sure you spend some time researching the lenses available for each system

Selfie screen

The must-have feature of the moment is a flip screen to make it easier to shoot self portraits

Kit lens

The kit lens that comes with the camera is a good starting point, but they're typically slow and can be rather plasticky



Handling

We'd always recommend getting hands-on before you buy. This will give you a better impression of how it fits your hand and whether you find the menu system intuitive to use

P66 Accessories

- Microsoft Surface Pro 3 • Sirui T-005X travel tripod • Navitas Pacaway jacket
- Zkin Hamsa bag
- Solar Technology CamCaddy 2



P68 Camera tests

This month, we focus on the **Canon PowerShot G3 X**, with its huge zoom and 1in sensor.

We also get hands on with the small and perfectly formed 42MP **Sony A7R II**.



P74 Lens tests

Could the **Nikon 16-80mm 1/2.8-4** be the lens that DX-format users have been waiting for? Find out here. Looking for a classic portrait lens? The **Fuji XF 90mm 1/2** might be just what you need...



5 Canon EOS M3 £499



The EOS M3 is built around a sensor found in both the Canon EOS 750D and 760D DSLRs. Although this 24MP sensor is certainly welcome in a CSC, it unfortunately lacks the dual-pixel focus technology found in some more advanced Canon DSLRs. Instead, the M3 has a 49-point hybrid AF system with on-sensor phase-detect pixels.

The M3 makes do with conventional full HD 1920 x 1080 recording at 30, 25 or 24fps. Its 3in, 1,040k-dot touchscreen is hinged – as opposed to vari-angle – while an EVF is an optional extra. Finally, the camera has Wi-fi and NFC connectivity and features an IR receiver.

Compact yet solidly built, the M3 is arguably one of the best-handling CSCs in its class; the general layout of dials and buttons is well thought out.

Similarly, the touchscreen will feel natural to smartphone owners.

The only real disappointment is the 18-55mm kit lens, which, while sharp, is bulky compared to its rivals.

The original EOS M struggled with focusing speeds but the M3 is a big improvement. Though not as quick as some rivals, it acquires focus promptly and is generally accurate.

To use Canon's EF and EF-S mount lenses, you'll have to purchase the EF-EOS M mount adaptor. It works perfectly well with newer STM lenses, but with older lenses there's a noticeable slowing of focusing.

Start-up is almost instant and its 4.2fps continuous shooting rate is respectable, but it's hampered by the inability to use live view while shooting in this mode, as well as being slowed by the usage of tracking AF.

Image quality is very good, while noise is a mixed picture. The ISO range is 100-12,800, expandable to 25,600. Results are excellent up to ISO 400 and usable up to ISO 3200, but at the highest ISOs, they suffer. Finally, the M3 does lag a bit behind rivals with regards to dynamic range.

KEY SPECS

SENSOR
24.2MP APS-C CMOS
FILE FORMATS
JPEG, Raw, Raw+JPEG
DISPLAY
Tilt-type 3in, 1,040,000-dot LCD touchscreen
ISO RANGE 100-12,800 (expandable to ISO 25,600)
EXPOSURE MODES PASM, Scene Intelligent Auto, Creative Assist, Hybrid Auto, Scene, Creative Filters, Custom
BURST 4.2fps
MOVIE MODE 1920 x 1080p Full HD at 30fps
DIMENSIONS
110.9 x 68.0 x 44.4mm
WEIGHT 366g with battery and card

PROS

- Excellent design and user interface
- Pleasing image quality

CONS

- Focusing speed and continuous shooting still behind competition
- Lacks built-in viewfinder

Verdict

The EOS M3 is compact, well made, and a pleasure to use. AF speed is vastly improved, though it still lags behind notable rivals. Images are impressive, with the sensor delivering bags of detail and low noise at lower ISOs. But it has a relatively slow burst mode and small buffer, while the kit lens is bulky compared to the competition, though optically it's very good.



BEST FOR

- Overall image quality
- Existing EOS owners, due to familiarity of the controls
- Using Wi-fi and NFC for sharing images on smartphones

FEATURES

PERFORMANCE

DESIGN

IMAGE QUALITY

VALUE

17/20

17/20

18/20

18/20

17/20



4 Fujifilm X-A2 £349



The rise of the selfie has seen many manufacturers introduce articulated screens. The X-A2 is a good example, and its new 3in, 920k-dot tilt-type screen that can be flipped by 175° is the biggest change to a camera that shares many similarities with its predecessor – the X-A1.

Introducing multi-target AF, other refinements see Classic Chrome added to the film simulation modes, a 17% improvement in battery life, and an all-new Auto Macro function. This last addition is designed to tie in with the camera's new kit lens, which enables users to focus closer to within 15cm of a subject. In all other respects, the X-A2 is a carbon copy of the X-A1. It adopts the same 16.3MP APS-C-size CMOS sensor and EXR processor II, providing an ISO range of 200-6400 that's expandable to ISO 100-25,600.

There's a 256-zone TTL Multi metering system, built-in pop-up flash, Wi-fi connectivity and +/-2EV exposure compensation. The shutter speed range of 30secs-1/4000sec remains unchanged and it continues to offer Full HD video recording.

The body is made entirely of plastic and there's a handling quirk, too – the smaller recessed wheel located above the thumb rest is rather loose and is prone to being inadvertently knocked. The screen has a rather plasticky feel about it, much like the body.

The X-A2 performs admirably, and is capable of shooting at 5.6fps for as many as 30 frames set to JPEG. The contrast-detect AF system acquires focus within 0.3sec. Where the camera really shines is in the image quality. Sharp, well exposed and full of detail, superb results can be achieved up to ISO 3200, with noise only becoming obvious at ISO 6400 and beyond. The X-A2 also offers Dynamic Range Compensation that allows you to expand the dynamic range in the shadows and highlights before detail begins to clip. In-camera Raw conversions are possible, too.

KEY SPECS

SENSOR
16.3MP, APS-C CMOS
FILE FORMATS
JPEG, Raw, Raw+JPEG
DISPLAY
Tilt-type 3in, 920k-dot LCD
ISO RANGE
200-6400 (exp. to 100-25,600)
EXPOSURE MODES
PASM, SR Auto, Advanced Filter, Scene
BURST 5.6fps
MOVIE MODE
1920 x 1080p Full HD at 30fps
DIMENSIONS
116.9 x 66.5 x 40.4mm
WEIGHT 350g with battery and card

PROS

- Tilt-type LCD screen
- Manual control
- Fast start-up
- Improved battery life
- Number of XF lenses

CONS

- Plastic buttons and build quality
- No USB charging
- Single function (Fn) button

Verdict

Fujifilm has refined the X-A2 to ensure it's well tailored for those who'd like to buy their first serious camera and take their photography to the next level by using manual control. Its design and image quality make it one of the most attractive entry-level CSCs, and it's only let down by its rather plasticky construction, meaning it's much less robust than Fujifilm's premium models.



BEST FOR

- Those wanting to step up from a compact or smartphone
- Those who want a camera supported by a strong lens line-up
- Style-conscious shooters who want to look the part

FEATURES

PERFORMANCE

DESIGN

IMAGE QUALITY

VALUE

18/20

18/20

17/20

18/20

18/20



3 Sony A6000 £495



The Alpha 6000 replaces the NEX-6, as Sony migrates all its NEX cameras over to its Alpha range. The A6000 is equipped with a 24.3MP Exmor CMOS sensor, Sony's latest Bionz X image processor and a lightning-fast AF system. The proprietary Bionz X processor enables the A6000 to shoot at 11fps for up to 49 consecutive frames when shooting JPEG, or 21 frames in Raw and JPEG.

It also helps to facilitate lightning-fast autofocus, with Sony claiming a minimum focus acquisition time of just 0.06 seconds. The Hybrid AF is not only quick but also accurate, thanks to the 25 contrast-detect and 179 phase-detect points. While the A6000 operates like a DSLR, it looks and feels more like a CSC, much like its predecessor, the NEX-6, did.

With a lens attached, the A6000 feels balanced and comfortable. The handgrip features an ergonomic, rubberised finish that allows for easy one-handed operation too. While the NEX-6 featured a 0.5in, 2.3m-dot electronic viewfinder, the A6000 comes with a 0.39in, 1.44m-dot unit. While that does feel like a bit of a step backwards, the 100% field-of-view and increased vibrancy and clarity are both improvements. On the back there's a 3in, 921k-dot LCD display – hardly class-leading, but still capable enough.

In terms of connectivity, the A6000 boasts both Wi-fi and NFC, allowing for wireless image transfer and remote shooting. The Sony A6000 uses a 1,200-zone evaluative multi-segment metering system that excels when it comes to delivering accurate exposures. The Auto White Balance setting is consistent, even in mixed lighting. Image noise is well controlled up to ISO 6400, although beyond this, noise does begin to take over. Thankfully, this can be alleviated with the camera's multi-frame noise-reduction technology.

KEY SPECS

SENSOR:
24MP APS-C CMOS
FILE FORMATS:
JPEG, Raw, Raw+JPEG
DISPLAY:
Fixed 3in, 921k dots
ISO RANGE:
100-25,600 (exp to 51,200)
EXPOSURE MODES:
PASM, iAuto, Superior Auto, Scene
DRIVE MODE:
Single, Continuous, Self-timer, Bracketing
MOVIE MODE:
1920 x 1080p Full HD at 60/24fps
DIMENSIONS:
120 x 67 x 45mm
WEIGHT:
344g

PROS

- Good high ISO performance
- Great specification
- AF speed acquisition

CONS

- LCD screen could be a little more high-end
- EVF a touch behind competition

Verdict

The Sony Alpha 6000 comes with an impressive specification, and its performance doesn't disappoint. The blisteringly quick autofocus performance and a superb burst mode are especially worth singling out for praise. It's hard to pick out any substantial flaw on the Alpha 6000, and it's safe to say that it is one of the most impressive Compact System Cameras around.



BEST FOR

- Those shooting fast-moving action subjects
- People who want the performance of a DSLR in the body of a CSC • NEX users looking to upgrade

FEATURES

18/20

PERFORMANCE

18/20

DESIGN

18/20

IMAGE QUALITY

18/20

VALUE

18/20



2 Olympus OM-D E-M10 £478



The E-M10 is aimed towards the consumer end of the market. It meets this market with certain compromises, including a lack of weatherproofing. The E-M10 does, however, retain the same Four-Thirds 16.1MP sensor seen in the E-M5 and inherits the TruPic VII processor from the E-M1 – which delivers a continuous shooting speed of 8fps. A key feature of the OM-D E-M10 is its EVF, which features a resolution of 1,440k dots and comes with 100% field of view coverage and a lag time of 0.027 secs. An impressive screen accompanies the viewfinder and measures 3in, with a resolution of 1,040k dots. Furthermore, the LCD features full touch technology as well as being of the vari-angle type. The three-axis image-stabilisation system is a touch

inferior to the five-axis system seen on the E-M1 and E-M5. As well as a built-in flash, there's built-in Wi-fi to wirelessly transfer images using the manufacturer's OI.Share app.

The camera is well designed in terms of ergonomics. A substantial handgrip and rear textured thumb grip make it secure to hold, while in terms of autofocus, the camera benefits from an 81-segment set-up. Thanks to this substantial coverage, it delivers a sharp focusing performance with a good level of accuracy.

The EVF's 120fps refresh rate means there's barely any lag and it can display colour mode options and art filter effects as they're applied.

The metering system generally performs well, with a dynamic range performance that almost matches that given by similarly-priced DSLRs. A detail readout of 28 l/ph was recorded at its lowest ISO setting and the in-camera image noise reduction works effectively up to ISO 1600. Above this point users will find there is an impact on the rendering of fine detail. As for colour, the general colour palette is also fairly true to life.

KEY SPECS

SENSOR:
16.1MP (Micro Four Thirds)
FILE FORMATS:
JPEG, Raw, Raw+JPEG
DISPLAY:
3in, 1,037k-dot vari-angle LCD
ISO RANGE:
100-25,600
EXPOSURE MODES:
PASM, iAuto, Scene
DRIVE MODE:
8fps
MOVIE MODE:
1920 x 1080p Full HD at 30p
DIMENSIONS:
119 x 82 x 46mm
WEIGHT:
396g

PROS

- Impressive electronic viewfinder
- Wi-fi functionality
- Eye-catching design

CONS

- Not quite class-leading video capabilities
- JPEGs over-sharpened at times

Verdict

The OM-D E-M10 is up against some stiff competition in the Compact System Camera market. While it might not quite have the edge over its DSLR price-rivals, it has enough DSLR-esque functionality to potentially get the nod for enthusiasts over the Panasonic GX7. With impressive images, and the growing OM-D system to which the E-M10 belongs, it would make a wise investment.



BEST FOR

- Photographers seeking a smaller, but advanced alternative to a DSLR • Functionality akin to a DSLR in an appealing compact size

FEATURES

18/20

PERFORMANCE

17/20

DESIGN

19/20

IMAGE QUALITY

18/20

VALUE

18/20





The GX7's stylish looks are backed up with a premium feel that shouts class and quality



Panasonic LUMIX GX7 £443

1 Claimed by Panasonic to be its best ever release, the GX7 is our pick as the top entry-level CSC model on the market

The Lumix GX7 is more than just a subtle upgrade to the GX1 – it's a completely reworked model that's been designed from the ground up to appeal to enthusiasts and professionals looking for a compact alternative to their DSLR kit.

Though it may share a similar 16MP resolution to other Lumix models, the chip is completely new and is combined with a new Venus Engine processor, which helps to deliver an improved image noise performance and broader dynamic range. This is reflected some way in the camera's ISO, running from 200 to 25,600 (expandable to a base ISO of 125 if this is required).

There's a raft of other updates, too, most notable of which is the inclusion of a built-in electronic viewfinder with an impressive 2.7m-dot resolution. It offers tilt functionality, just like its 3in, 1.03m-dot touchscreen and becomes the first camera of its type to offer a so-called 'double-tilt' design.

Focus speeds of 0.06sec are achieved through Panasonic's Light Speed AF technology, and it's capable of focusing in lighting conditions as dark as -4EV (roughly equivalent to starlight). It's refreshing to see a top shutter speed of 1/8000th sec, while the flash sync is also impressive at 1/320sec. Adding to these high-speed credentials is a 5fps continuous burst rate in Single AF with its mechanical shutter, while it's also possible to shoot 12 frames at a rate of up to 60fps using the electronic shutter. Not to forget

KEY SPECS

SENSOR
16MP (Micro Four Thirds)
FILE FORMATS
Raw, JPEG, Raw + JPEG
SHUTTER SPEEDS
30-1/8000sec, Bulb
ISO
200-25,600 (exp.to ISO 125 equivalent)
EXPOSURE MODES
Scene, Creative Control, PASM
DRIVE MODES
Single, Continuous, Self-timer
MOVIE MODE
1920 x 1080 (50i, 25p, 24p)
DISPLAY
3in tilt touchscreen, 1,040k dots
VIEWFINDER
EVF, 2.76million dots
BUILT-IN FLASH
GN 7 at ISO 200
AF POINTS
23
MEMORY CARD
SD, SDHC, SDXC
POWER
Rechargeable lithium-ion
DIMENSIONS
122.6 x 70.7 x 54.6mm
WEIGHT
402g (including memory card and battery)

connectivity, the GX7 is fully equipped with Wi-fi and NFC and shoots full HD footage at 50i, 25p, or movie-like 24p in the AVCHD format. It is a little disappointing that there are no connections to plug in an external microphone, however.

Larger than the GX1, the GX7 has a number of exterior controls and dual dials for independent control of aperture and shutter speed in manual mode. The relatively large rubberised grip is well received and there's a very useful AF/AE button found within the AF/MF switch. The EVF does jut out from the body, but the tilt screen sits flush and the combination of its magnesium chassis and tactile finish provides a very high-end, premium feel that shouts quality.

The touchscreen speeds up general shooting and is great for tapping with the finger to acquire focus. There are no complaints about how it focuses either, capable of performing well in the most dimly lit of environments.

The camera exposes accurately and the most exposure compensation you'll have to dial in is between +0.3-0.7EV in some instances. Noise-free images are produced all the way up to ISO 1600, with chroma noise starting to become more obvious at ISO 3200 and above. Our lab tests showed that the GX7 is capable of resolving detail down to just over 24 lines per mm (lpmm) at a base ISO of 200, dropping down to 20 lpmm at ISO 6400. This compares well to DSLRs with APS-C sensors and matches its closest rival, the Olympus PEN E-P5.

Verdict

The Panasonic Lumix GX7 offers an excellent shooting experience which it backs up with a sensor that performs very well. It's a different proposition from the GX1 and is worth the extra outlay for the plethora of programmable body-mounted controls and host of impressive features that will certainly keep photographers more than satisfied in most situations.

BEST FOR

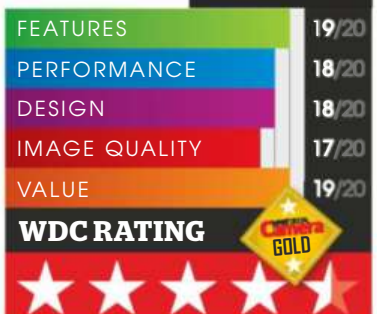
• Those looking for a high-performing Compact System Camera with advanced features and a wide selection of lenses available

PROS

- Built-in tiltable EVF
- Comfy handgrip
- Body-mounted controls
- Fast AF
- Good value considering the spec

CONS

- No connection for external microphone or video
- No headphone and external microphone ports



COMPETITION

magazines
direct.com



Win a Fujifilm X30 premium compact!

One lucky reader will scoop this superb high-end compact camera, which gained a gold award when tested in *WDC*

One of Fujifilm's excellent X-series advanced compacts, the Fujifilm FinePix X30 (in classic black) is a stylish compact camera you can take anywhere and achieve excellent results. It has a large 2/3in X-Trans™ CMOS II sensor with no optical low-pass filter and delivers 12MP images. Viewing of images is available on the tilting 3in 920k-dot premium clear LCD. The FinePix X30 has the largest, fastest and highest resolving viewfinder in its class and works effortlessly in real time. Thanks to Digital Depot, we have one X30 to give away!

DIGITAL DEPOT was the first digital-only photographic shop in the UK. Based in Hertfordshire, we have a professional high-street showroom, as well as an online shop, www.digitaldepot.co.uk. The accumulated knowledge within our staff and management means we are at the forefront of the latest technological innovations and changes. Serious About Service has long been our company motto and philosophy, and through this we have been privileged to win many customer-nominated awards in national publications.



Answer this question:

How many dots does the Fujifilm X30's LCD monitor have?

Closing date: 27 September 2015

For more details about this prize, visit www.fujifilm.eu/uk



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Microsoft Surface Pro 3 From £639

WWW.MICROSOFT.CO.UK

While Apple's range of desirable laptops and iPads seems to be the favourite image-editing platform for many photographers, there's a growing number of sleek-looking and high-performance Ultrabook and tablet PCs that are looking to change that. Microsoft's Surface Pro 3 is a prime example.

The third generation of Microsoft's hybrid tablet, the Surface Pro 3 is a fully fledged Windows 8 (and now Windows 10) PC that's been designed to work just as well in tablet mode. This means you can run the likes of Adobe Photoshop CC and Lightroom CC on a Surface Pro 3. Combined with a large 12.1in display (the iPad Air 2's display is only 9.7in) this means it has the potential to do away with the need for a separate laptop, should you go for the optional keyboard cover (£109).

It's a little bit tubbier than a lot of

tablets, but the Surface Pro 3 packs quite a bit more of a processing punch – our test sample featured an Intel Core i5-4300U processor and 4GB of RAM. The built-in kickstand is a nice touch, allowing you to pull out and angle the tablet just how you want.

Processing large files in Lightroom saw the Surface Pro 3 perform well, especially as they were 36MP images from a Nikon D810. Sharp and bright,

the screen was also just large enough to provide a decent amount of real estate when editing, while the stylus Surface Pen allows plenty of quick control over sliders and selective adjustments.

The Microsoft Surface Pro 3 offers something a bit different from the likes of an Apple MacBook Air. Whether you want to edit in the field or browse the internet on your sofa, the refined Surface Pro 3 is a versatile and powerful proposition. **PH**

PROS

- Powerful laptop performance in a tablet form
- Versatile

CONS

- Bulky
- Keyboard an optional extra

Optional click-in keyboard

Snap-locking to your Surface Pro 3, this transforms the tablet into a laptop.

Multi-position kickstand

This allows you to place the Surface Pro 3 at an angle to suit you.

Great connectivity

A MicroSD card reader and full-sized USB 3.0 port bring added connectivity to the Surface Pro 3.

“The Surface Pro 3 packs quite a bit more of a processing punch than a lot of other tablets”



SIRUI T-005X TRAVEL TRIPOD £99

WWW.SIRUI.EU/EN

The last thing you want to do on a long day on location is lug around a hefty tripod; so the lightweight aluminium Sirui T-005X may be just what you need. With the ball head attached, it weighs just over 1kg, and stands at 32.5cm when closed with a maximum height of 139cm, a minimum height of just 19cm and a maximum payload of 4kg. It strikes an impressive balance between strength, size, weight and height, and represents good value for money. A big bonus is that the slimline C-10X ball head comes included with the tripod, and its build quality is just as impressive. **AW**



NAVITAS PACAWAY JACKET £39.99

NAVITASOUTDOORS.COM

Never underestimate the unpredictability of the great British climate. One minute it can be glorious sunshine and the next it's time to run for shelter to avoid a thunderstorm. Taking the Navitas Pacaway along is a decent pre-emptive measure. Lightweight, breathable and waterproof, it also, as the name suggests, packs away into its own pocket. Measuring just 15 x 20 x 7cm when stuffed away and weighing just 380g, the Pacaway is easy to carry in your kit bag and takes up very little room. It's available in XS-XXXL sizes. **CMR**



Zkin Hamsa bag £129

WWW.Z-KIN.COM

The Zkin Hamsa bag provides ample space for a 13in laptop, a small DSLR with a lens attached plus two large lenses or a similarly sized CSC kit. The bag measures 42 x 28 x 14cm externally, and there are two dividers in the centre with a small flap on the top of them to allow smaller lenses to be stacked to fit. There are pockets at the front and rear for memory cards and cables, while thanks to the adjustable brass and zinc alloy snap-lock fastenings, there's also lots of expandable space for personal gear. It's worth noting that, unlike many bags that are rated to fit a 13in laptop, a 15in can't be squeezed in.

The outer material is a water-resistant denier nylon with a ballistic weave, making it look a lot like traditional canvas, with the advantages of greater strength and durability. Leather detailing is used

throughout, including the adjustable strap.

I used the Zkin Hamsa to carry Pentax K-3 II, Fujifilm X-T1 and Olympus OM-D E-M5 Mk II kits, and it will house both a small DSLR and mirrorless kits with ease. Initially I thought having the strap attached to the back of the bag would feel a bit strange, but it's very comfortable to carry. My only real issue was that the pop-lock-style closure could easily open, so something could accidentally fall out of your bag. Aside from that, the bag is superb. It's stylish, has great build quality, and sufficient protective padding for your kit. **CMR**

PROS

- Interior padding
- Build quality

CONS

- The pop-lock-style closure can easily open



Solar Technology CamCaddy 2 £20

WWW.SOLARTECHNOLOGY.CO.UK

Solar Technology makes various battery-based products, including the CamCaddy 2. This battery charger works with almost all block-style batteries, making it an ideal travel companion if you use multiple cameras.

The CamCaddy 2 was designed to work in conjunction with the company's Freeloader ISIS solar-charging power bank (£64.99), which can be plugged into the Micro USB port to power the charger. With its Micro USB power input, the CamCaddy 2 is incredibly convenient. Using a USB

cable, users can charge batteries from their laptop, USB plug, car charger or from Micro USB smartphone chargers. The CamCaddy 2 also boasts smart electronics that automatically adjust to the correct voltage to ensure speedy but safe charging of batteries.

I used the first-generation CamCaddy charger, and its build quality was horrible. However, it's clear that the design has gone back to the drawing board. It holds batteries in place as well as any other universal charger and, most importantly, the pins line up with almost every type of battery.

I used the CamCaddy 2 during a European fishing trip, and found the ability to charge my Canon EOS 5D Mark II battery from a power bank incredibly useful. The advantage of the USB charging functionality, combined with a great battery charger, is huge. The CamCaddy 2 is well built, sturdy and is a worthy kit-bag companion for any travelling photographer. **CMR**

PROS

- Works with most batteries
- Well built

CONS

- Doesn't work with block-style batteries





SONY Alpha 7R II £2599 BODY ONLY

Is the A7R II the full-frame CSC we've all been waiting for from Sony?

WWW.SONY.CO.UK • TESTED BY MICHAEL TOPHAM

The Sony Alpha 7R was a huge success in the way it managed to squeeze a full-frame sensor into a body that's a fraction of the size and weight of many DSLRs. It wasn't without its critics, though, and Sony has set out to address their concerns with the Alpha 7R II.

The Alpha 7R II features the world's first back-illuminated full-frame 42.4MP sensor. One key benefit of this is an improved sensitivity range of ISO 100-25,600 (expandable to ISO 50-102,400). Equipped with a high-speed Bionz X image processor, it can shoot continuously at up to 5fps, while it introduces a fast-hybrid AF that comprises 399 phase-detection and 25 contrast-detection focus points and covers 45% of the image area. In addition, it adopts the superb five-axis in-body stabilisation system first seen in the Alpha 7 II and features a quieter electronic front curtain shutter as well as a 0.5in, 2.4-million-dot OLED EVF that improves upon the A7R with a higher 0.78x magnification. The addition of 4K movie recording and other professional video features such as Time Coding and the ability to shoot in S-Log2 Gamma will entice serious videographers.

Slimmer command dials and relocated shutter button make it a much more pleasing camera to operate. Sony has also strayed away from the smooth, semi-gloss black finish of its forerunner, opting for a matte-black speckled finish that

gives it a smarter, premium look. The eye cup is softer, buttons and dials feature seals against dust and moisture, while the SD slot and the areas of the housing that join together feature an interlocking system to prevent inclement weather from reaching the internals.

With regard to performance, it's when the light levels drop that you appreciate how much more responsive the new focusing system is. It's faster than the A7R when focusing with lenses that are attached via an adapter. With the electronic front curtain shutter and SteadyShot deployed I could shoot pin-sharp 42.4MP images handheld as slow as 1/20sec. A further improvement is the aforementioned shutter. Even with the electronic front curtain switched off, the shutter is slightly quieter than the Alpha 7R. When the 7R II is switched on, the loud slap you hear from the Alpha 7R is no longer there, and it's a much less obtrusive model for working discreetly.

It's dynamic range is sensational and though it doesn't resolve quite the same detail as the Canon EOS 5DS R, detail is still outstanding. It holds up extremely well at high sensitivities and despite a hint of noise at ISO 3200 and ISO 6400 both settings are more than usable, as is ISO 12,800 and ISO 25,600 at a push. In-camera noise reduction does take the edge off the finest detail as you encroach upon ISO 6400, so it's advisable to shoot Raw if using the higher ISOs.

KEY SPECS

SENSOR

42.4MP, full-frame Exmor R CMOS sensor

LENS MOUNT

Sony E-mount

FILE FORMAT

Yes, 3.5mm stereo

DISPLAY

3in, 1.2-million-dot LCD

VIEWFINDER

2.4-million-dot, 0.78x magnification

EVF

ISO

100-25,600 (50-102,400 extended)

EXPOSURE MODES

PASM, Auto, Sweep

panorama, Scene

BURST

5fps

MOVIE MODE

4K and full HD

DIMENSIONS

126.9 x 95.7 x

60.3mm

WEIGHT

625g (with battery and card)

Verdict

The Alpha 7R II is a huge step up from the Alpha 7R, and the improvements address many of the criticisms of its predecessor. Sony currently has 11 E-mount full-frame lenses, so there's no longer a limited supply of lenses and there'll be no shortage of glass to choose from in the future. If you do bite the bullet and go for the Alpha 7R II you won't be dissatisfied by its results and you'll be a proud owner of one of the finest full-frame CSCs available.

BEST FOR

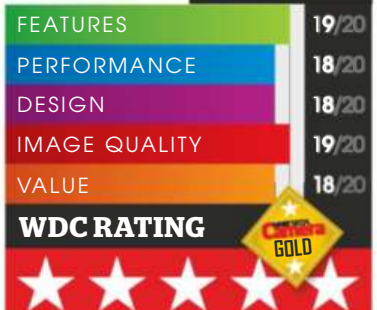
- Photographers after an advanced full-frame CSC
- Excellent detail at high ISO • Those after a smaller, lighter, powerful substitute to a full-frame DSLR

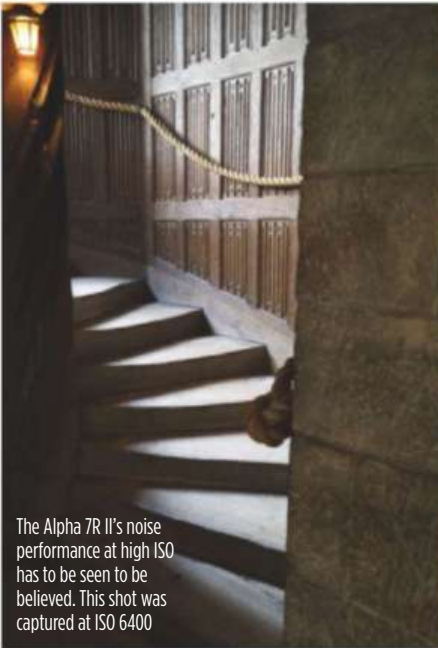
PROS

- Stunning image quality with high levels of detail
- Refined design with improved handling
- Wide autofocus coverage across the frame • Superb 5-axis image stabilisation

CONS

- Large file sizes
- Low battery life (290 shots using viewfinder)
- Lacks touchscreen functionality





The Alpha 7R II's noise performance at high ISO has to be seen to be believed. This shot was captured at ISO 6400



The 42.2MP sensor resolves outstanding levels of detail and file sizes typically weigh in around 43-44MB per image



The Alpha 7R II was paired up with the new Zeiss Batis 85mm f/1.8 lens to create this super-shallow depth of field



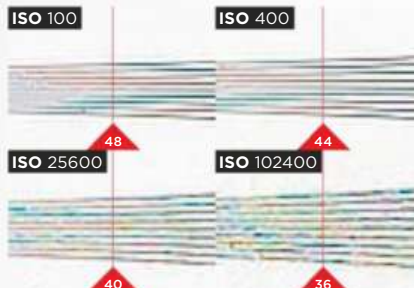
The metering system performs admirably, even in tricky scenes such as this when you want to shoot towards the light

Image quality



COLOUR

Colours between ISO 100-25,600 are excellent, with saturation only starting to take a slight hit when the sensor is pushed to ISO 102,000. Below its ISO ceiling, colours are rich, vibrant and faithful as you'd expect.



RESOLUTION

The Alpha 7R II doesn't resolve quite the same level of detail as the Canon EOS 5DS R, but puts in a superb performance nevertheless. Detail holds up very well to ISO 3200 and drops only slightly at ISO 6400.

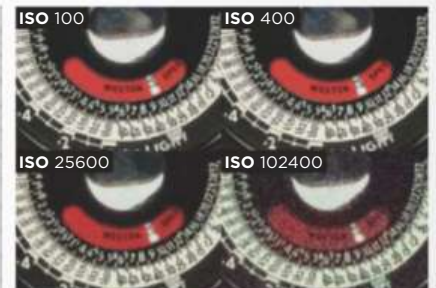


IMAGE NOISE

There's no sign of luminance noise between ISO 100-1600 and it's of such fine texture at ISO 3200 and 6400 that what you can see of it under close inspection can be removed by applying noise reduction in post.



The touchscreen interface of the PowerShot G3 X is superb



CANON POWERSHOT G3 X £799

The G3 X combines a long zoom with a relatively large 20.2MP 1in sensor
WWW.CANON.CO.UK • TESTED BY ANDY WESTLAKE

Canon has been making fixed-lens compact cameras with larger-than-average sensors for longer than most, with its G1 X appearing back at the start of 2012. With the PowerShot G3 X, it's gone a step further, placing an exceptionally long 24-600mm 25x zoom lens in front of a 20.2MP 1in type sensor. On paper, this should result in the most capable superzoom camera yet made, trumping the Panasonic Lumix DMC-FZ1000 which has a 25-400mm equivalent f/2.8-4 lens.

However, while other cameras of this type employ an SLR-like design with a built-in electronic viewfinder, the G3 X instead relies on a large rear touchscreen, which tilts downwards for overhead shots and upwards to face forwards for selfies. Unfortunately, the G3 X is awkward to use with the rear screen at the long end of the zoom, as it's difficult to hold the camera steady and keep track of your subject. It's possible to fit an accessory viewfinder (the Canon EVF-DC1) on to the hotshoe, and this improves the handling considerably. But it adds £200 to the cost and negates the size advantage of the finderless design.

In terms of design, the G3 X is little more than a box-shaped body, with a decent-sized handgrip and large lens barrel on the front. Its solid, dustproof and splashproof body has a good complement of external controls, including a dedicated exposure compensation dial and twin electronic control dials

for changing exposure settings. Canon's excellent touch interface gives quick access to a wide range of settings, but because the design encourages you to cradle the lens with your left hand, it's usually quicker and more natural to change settings with the buttons and dials.

The lens has a decently fast f/2.8 aperture at wideangle, but drops to f/4 around 50mm, and f/5.6 from about 200mm through to 600mm. It has built-in optical stabilisation, which works pretty well to combat the effect of camera shake. The sensor provides a sensitivity range of 125-12,800, and offers very good image quality at settings up to ISO 1600 at least. Autofocus uses a 31-point contrast detection system, with face detection and subject tracking also available.

Continuous shooting is available at 5.9fps in JPEG mode with focus and exposure fixed, and 3.2fps with autofocus between frames. By modern standards this looks a bit slow, but if you turn on Raw recording it drops to less than 1fps. This is disappointing compared to the Panasonic FZ1000's 12fps, particularly because the G3 X's long lens is suited to sports and action photography.

On the plus side, the metering and auto white balance works well. The default colour output is bright and saturated, and there's plenty of scope for experimentation with Canon's 'My Color' settings, although these are unavailable when shooting Raw.

KEY SPECS

SENSOR
20.2MP BSI-CMOS
LENS
24-600mm equiv.
f/2.8-5.6
FILE FORMATS
JPEG, Raw (CR2)
DISPLAY
3.2in, 1.62-million-dot tilting LCD touchscreen
ISO RANGE
125-12,800
EXPOSURE MODES
PASM, Smart Auto, Scene
BURST
5.9
MOVIE MODE
(Full HD) 1920 x 1080 at up to 60fps
DIMENSIONS
123.3 x 76.5 x 105.3mm
WEIGHT 733g (including battery and memory card)

Verdict

The combination of the 20.2MP sensor and 24-600mm lens sounds hugely tempting but the G3 X ends up being rather less than the sum of its parts. Other companies such as Panasonic and Sony are adding EVFs into much smaller cameras, so the lack of a built-in viewfinder is puzzling, as it makes shooting with the G3 X's long lens a bit of a trial. If you absolutely need the telephoto range, consider the G3 X, but if not, then better options are available.

BEST FOR

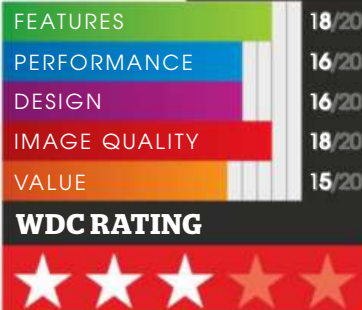
- Great image quality performance
- Outdoor photographers who need a long zoom range
- Impressive detail

PROS

- Extremely flexible zoom range
- Very good image quality
- Excellent touchscreen

CONS

- No viewfinder
- Poor continuous shooting in Raw mode





With its extensive zoom range, the G3 X's lens encourages creative compositions



The G3 X's tilting screen encourages shooting at low angles

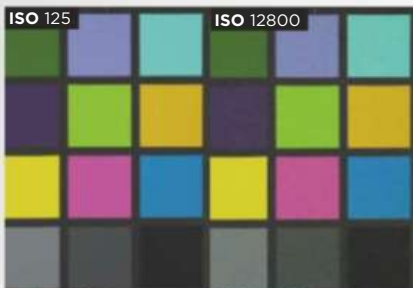


The long zoom lens is good for perspective compression effects



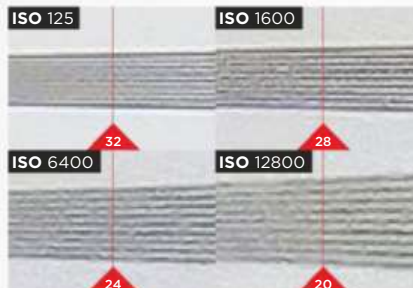
Colours are generally bold and attractive

Image quality



COLOUR

Canon's default processing gives bold, saturated colour with characteristic deep blue skies, which at times can verge on the cartoonish. Colours are maintained well up to ISO 3200, but fade at higher settings.



RESOLUTION

At its best the G3 X can resolve an impressive 3200 l/ph, which is as good as it gets from this sensor. Resolution only drops slightly to 2,800 l/ph at ISO 1600, but above this it falls off rapidly.

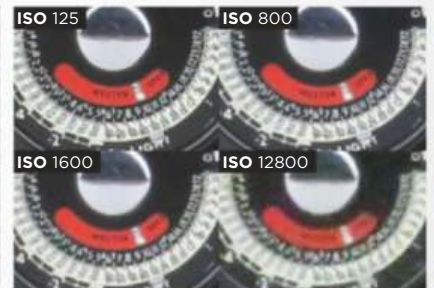


IMAGE NOISE

At low ISO settings, images are clean with plenty of detail. At ISO 800 fine detail starts to smear, and shadow detail visibly suffers from ISO 1600 upwards. The top settings from ISO 6400 are very noisy indeed.

Nikon

AF-S DX Nikkor 16-80mm f/2.8-4E ED VR £869

The versatile focal range means the 16-80mm is perfect for a variety of subjects



Nikon's latest standard zoom could be the lens DX-format users have been longing for

WWW.NIKON.CO.UK • TESTED BY PHIL HALL

In recent years, Nikon's lens engineers have been a little preoccupied with their full-frame FX-format lenses. But with the AF-S DX Nikkor 16-80mm f/2.8-4E ED VR, it seems the wait for a high-quality standard zoom for DX-format DSLR users is over.

Features

The AF-S DX Nikkor 16-80mm f/2.8-4E ED VR lens has 17 elements in 13 groups. These include four with extra-low dispersion (ED) glass elements to minimise chromatic aberration, and three aspherical lens elements that not only control coma and other lens aberrations, but also correct the distortion in wideangle lenses. It has a fluorine coating that helps repel water and dirt, and makes it easier to clean the glass without damaging the front element.

As with other recent Nikon lenses, the 16-80mm f/2.8-4 has an electromagnetic diaphragm (denoted by the 'E' designation) that's designed to provide highly accurate control of the rounded

diaphragm blades to ensure more consistent exposures during continuous shooting. There are some compatibility issues, though, if pairing this lens with an older DSLR, including popular models like the D200 and D90. Speaking of diaphragm blades, there are seven on this lens; nine would have been better, as they tend to generate more pleasing bokeh.

Nikon's Silent Wave Motor (AF-S) ensures that focusing is as quiet as

Considering the 5x focal length packed into this lens, it is an incredibly compact model



possible, while Nikon's Vibration Reduction (VR) system is on board, allowing up to four stops of compensation. There are also two modes to choose from - Normal and Active, with Active more suited to situations when you're shooting from a moving vehicle.

Its 16-80mm focal length equates to 24-120mm (in 35mm terms) on a DX-format DSLR, making it suitable for a range of subjects. The maximum aperture may be variable, but it's still a welcome f/2.8-4, which, when paired with the VR system, should deliver plenty of flexibility under varied lighting.

The lens requires a 72mm filter thread, but the inclusion of internal focusing means your polarising or ND grad filter won't spin round when you focus and the front element remains in a fixed position.

Autofocusing

Thanks to the use of Nikon's Silent Wave Motor, focusing noise is virtually inaudible. When partnered with a D7200, the lens locks focus quickly and accurately in a range

“Despite a few small issues, the Nikon 16-80mm delivers a solid image quality performance”

of conditions, including fast-paced action shots. Focusing isn't quite as instantaneous when jumping from either extreme of the focusing range, but is more than satisfactory.

Build and handling

The exterior is made of a high-quality plastic finished with a dappled texture that complements Nikon DSLRs. There is a metal mount at the rear, while an O-ring seal around the mount limits dust and water entering the camera, though the lens doesn't pretend to be weather-sealed.

When teamed up with a D7200, the balance of body and lens in the hand is good, although on smaller DX-format DSLRs it will probably feel front-heavy. The compact size of the lens means there's little space for a large zoom ring, but the one that's fitted is adequate, and its positioning means it falls to the hand nicely. The slim manual-focus ring has a fine ribbed contour and rotates anti-clockwise relatively smoothly from infinity to closest focus (0.35m). Between the zoom and manual-focus rings is a modest focus-distance-scale window, marked in both feet and metres.

On the side of the lens are three switches. The first allows manual override of autofocus with minimal lag time and regardless of what AF mode you're using. Then there's the choice of switching the VR on or off, and the third lets you select between Normal and Active VR. They are clearly labelled but as they're all identical, an issue could arise if you want to change one quickly with the camera raised to your eye.

Image quality

With an extensive 5x focal range, there's a reasonable amount of strain put on the optics to deliver decent results. Despite a few small issues, though, the AF-S DX Nikkor 16-80mm f/2.8-4E ED VR lens delivers a solid performance.

It's worth bearing in mind that when shooting subjects with critical straight lines, barrel distortion is present at 16mm. This became apparent when shooting a coastal scene, and trying to level the scene became impossible thanks to the

slight bow in the horizon that was visible in the viewfinder. If you're prepared to adjust for this when shooting and correct it in Adobe Photoshop Lightroom, then shooting at f/11 – though not the sharpest aperture – still delivers decent edge-to-edge sharpness and virtually no signs of vignetting.

When shooting wide open at 16mm, image quality does suffer around the edges of the frame. While centre sharpness is good, there is noticeable vignetting right in the corners of the image. However, this may only really be the case at f/2.8, with things picking up as you stop down the lens.

Barrel distortion disappears as you move through the zoom range, to be replaced by only minor pincushion distortion, which is a lot better controlled. There are still issues with vignetting and edge sharpness if shooting wide open, but this improves greatly if you stop the lens down by one or two stops.

Verdict

The AF-S DX Nikkor 16-80mm f/2.8-4E ED VR is a well-specified lens with a versatile 5x zoom, 4-stop VR, electromagnetic diaphragm, relatively fast maximum aperture and compact form factor. But Sigma's 17-70mm f/2.8-4 DC OS Macro HSM | C offers a similar number of features yet costs £349, and the DX Nikkor 16-85mm f/3.5-5.6G ED VR, though not quite as fast as the Nikkor 16-80mm, is £449.

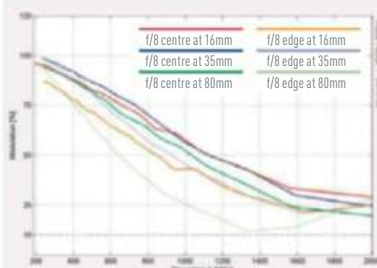
The lens delivers some great results, and so long as you're aware of its shortfalls you won't be disappointed. Its overall performance is good, with dependable performances from the autofocus and Vibration Reduction. It would have been nice to have seen more metal used in the construction, but this would have added to the weight.

The Nikkor 16-80mm f/2.8-4 is a good lens with a lot of positives, but not quite enough to justify the price.

Lab Tests

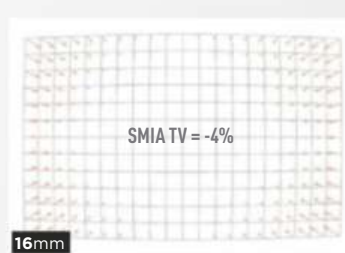
RESOLUTION

At 16mm and f/2.8, centre sharpness is good, but edges suffer. This improves as you stop down. At 80mm, edge sharpness at f/4 doesn't match the centre of the frame; sharpest results are at f/5.6.



CURVILINEAR DISTORTION

At 16mm noticeable barrel distortion can be seen in our test results. This disappears as you move through the zoom range, replaced by minor pincushion distortion.



KEY SPECS

FILTER DIAMETER 72mm
LENS ELEMENTS 17
GROUPS 13
DIAPHRAGM BLADES 7
APERTURE f/2.8-4
MINIMUM FOCUS 35mm
LENGTH 85.5mm
DIAMETER 80mm
WEIGHT 480g
LENS MOUNT Nikon DX

PROS

- General image quality
- Fast, quiet, accurate autofocus
- Versatile zoom range
- Compact size

CONS

- Vignetting wide open at f/2.8 and 16mm
- Plastic-heavy construction

WDC RATING



Vignetting is an issue wide open, but much better controlled as you stop the lens down

Fujifilm

Fujinon XF 90mm f/2 R LM WR £699

Autofocusing with eye detection is reasonably quick and precise



We test a fast-aperture medium telephoto prime lens for Fujifilm's X system cameras

WWW.FUJIFILM.CO.UK • TESTED BY CALLUM MCINERNEY-RILEY

Fujifilm's new Fujinon XF 90mm f/2 R LM WR lens has a 35mm equivalent focal length of 135mm on the Fujifilm APS-C X-Trans sensor cameras. Its fast aperture and long focal length should prove to be a big hit with portrait and wedding photographers, but it has potential applications in other genres, too.

Features

The Fujinon XF 90mm f/2 R LM WR houses 11 elements in eight groups. Three of these are extra-low dispersion (ED) glass elements, designed to reduce lateral and axial chromatic aberrations, while Fujifilm's Nano-GI coating is used to minimise flare and ghosting. The 90mm also boasts an internal focus system, and because the front element doesn't rotate, the lens can be easily used with polarising or ND grad filters.

However, the star feature is its focal length. This compresses perspective, and quashes much of the distortion of faces that can occur with wider focal lengths. Also,

as you're able to put distance between yourself and the subject, it's not as intimidating for timid models, and gives your subject room to act naturally.

The lens boasts an aperture range of f/2-f/16 and can achieve very shallow depth of field, while rendering backgrounds out of focus. It has seven aperture blades; some users would prefer nine and the ability to create more circular bokeh at apertures around f/4.

Optical image stabilisation isn't

The manual focus ring that covers a large amount of the lens handles very well



included. This could have been a useful addition, although for portraits it's unlikely that the user would see much benefit from shooting at slower shutter speeds due to blur from subject movement.

The lens comes with a cylindrical plastic hood, which helps improve contrast and cuts out some flare. When reversed, the hood sits very close to the lens barrel, giving protection when it's in a camera bag.

Autofocus

The lens features a newly developed focus system, the Quad Linear Motor system, and due to this Fujifilm claims focusing speeds of 0.14sec. In use, the autofocus is very quiet. I used the 90mm on the Fujifilm X-T1 with firmware versions 3.2 and 4.0. I shot a number of portraits using flashguns with the model lit solely by a tiny LED light for focusing. Both the speed of locking on and its accuracy were impressive. With firmware 4.0 the face detection improved, as well as continuous focusing. Its focusing isn't quite as fast as the Fujinon

16-55mm f/2.8, but appears to focus a fraction quicker than the Fujinon XF 56mm f/1.2 and, overall, it boasts better consistency and accuracy.

Build and handling

The lens is fairly weighty, due to the amount of glass and metal build. It sits comfortably and balances well on larger cameras like the X-T1 or X-Pro1. It may feel less balanced on smaller cameras. There's a manual aperture ring, with firm clicks that prevent accidental movement without being too stiff. Past f/16 a red 'A' mark indicates the automatic position. Unlike some Fuji primes, the 90mm doesn't have a push-pull focus ring that can be pulled back for manual focus, or a distance scale. But the manual-focus ring feels very intuitive, with excellent damping and responsiveness. Finally, the lens has weather sealing.

Image quality

Images shot wide open boast impressive sharpness with only a little softness evident in corners. At f/2.8 there's an improvement in sharpness in both the centre and corners. Shooting at f/5.6 seems to be the sharpest point overall and softness due to diffraction increases gradually from f/11 to f/16.

Fujifilm corrects certain lens aberrations in-camera, with both vignetting and residual chromatic aberrations removed almost entirely in JPEGs. When importing images into Adobe Lightroom or Camera Raw, I found the corrections for distortion, vignetting and chromatic aberrations were already set. To see the true characteristics of the lens, images must be imported into Capture One software and all corrections must be marked as off. Our findings show that at the maximum aperture of f/2, there's around 12 stop of vignetting, but when stopped down to f/2.8 it largely disappears. There's barely any visible distortion either.

The 90mm f/2's true area of interest, however, is the bokeh. Thanks to its long focal length, large aperture and seven-rounded-blade diaphragm, it creates beautiful bokeh in out-of-focus areas. These are wonderfully circular when shot wide open, and circular bokeh points feature towards the corners too. On stopping down a bit, though, out-of-focus highlights turn heptagonal rather than circular.



For shooting studio headshots, the 135mm focal length is perfect

Despite this, backgrounds generally look smooth and silky. I find the 90mm renders more attractive bokeh and out-of-focus areas than the excellent Fujinon XF 56mm f/1.6.

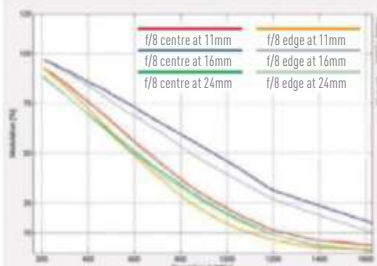
Verdict

Though the 90mm gives superb results stopped down, what's more important to most users is its performance at maximum aperture, and it's excellent. Wide open, the lens is sharp and free of optical flaws, while the bokeh and out-of-focus areas are delightful for portraits. Autofocusing isn't as fast as some of Fuji's lenses, but it's an improvement over the 56mm and is very quiet and accurate. This is important given the very shallow depth of field when shooting wide open. For portraits, especially tight headshots, the Fujinon XF 56mm f/1.6 does a good job, but the 90mm f/2 just does it better. If the focal length works for you, this is a must-have lens.

Lab Tests

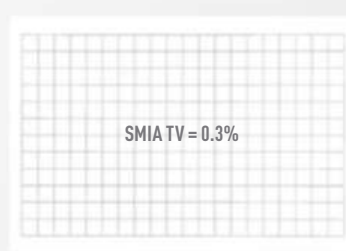
RESOLUTION

Wide open, the lens is sharp in the centre. There's a big jump in sharpness at f/2.8, and little change in our MTF figures after that, suggesting the lens has plenty to spare for higher-res sensors.



CURVILINEAR DISTORTION

Our tests reveal only very slight pincushion distortion, even when looking at Raw files with all corrections turned off, but at 0.3% it's unlikely ever to be visible in real-world images.



KEY SPECS

FILTER DIAMETER 62mm
LENS ELEMENTS 11
GROUPS 8
DIAPHRAGM
BLADES 7
APERTURE f/2
MINIMUM FOCUS 0.6m
LENGTH 105mm
DIAMETER 75mm
WEIGHT 540g
LENS MOUNT X mount

PROS

- Impressively sharp images • Speedy, quiet and accurate autofocus • Build quality

CONS

- Lack of versatility of the 90mm focal length

When shot at f/2 with a reasonable distance between subject and background, the bokeh looks fantastic



Compact or System camera?

Which camera type is best for you? A simple compact that fits in a pocket, a premium or travel compact that's more advanced, or a system camera that has interchangeable lenses and more user control, such as a CSC or DSLR? We help you decide...

All digital cameras are based around the same theory; use a light-sensitive sensor to capture light, then process the result and save it onto a memory card. Beyond that, the functionality can vary wildly from model to model, from touchscreen controls to HD video and wide-aperture lenses differentiating one model from another.

Digital cameras fit into three distinct categories: compact camera, Compact System Camera (CSC) and Digital Single Lens Reflex (DSLR) cameras. All three have sub-genres within them, but there are other obvious qualities which set them apart.

Compact cameras have a fixed lens, which can't be removed and changed. This means that the lens becomes a feature in itself, with some of them starting at a particularly wide focal length, or reaching out much further than others (or both), and others having

wide maximum apertures which prove their worth in low light and for controlling depth of field.

Manual controls, the ability to record HD video and a large, high-resolution display or viewfinder are just a few of

many other features that can be had when more money is spent.

Within the compact camera genre are the likes of bridge, or 'superzoom' models, which offer a far longer zoom lens and a body shape akin to that

of a DSLR, together with manual control over shutter speed and aperture. While they can be used more creatively than regular compacts, their small sensors (relative to DSLR and CSC cameras) place restrictions on

Compact

Small camera, generally pocket sized, with non-removable zoom lenses. Designed for convenience more than image quality, though some premium models feature larger sensors and manual controls.



PROS

Small, Affordable, No additional lenses required, Pocketable, Less intimidating to use than DSLRs

CONS

No option to change lenses for specific purposes, Small sensors not suited to all conditions

Bridge camera

Looks like a DSLR but is actually a compact with a high-magnification zoom lens in a DSLR-shaped body – usually incorporating a large hand-grip and often a viewfinder.



PROS

Long zooms, All-in-one design, Manual controls

CONS

Generally small sensors are no match to DSLR quality, Build quality can be more plasticky than a DSLR

Jargon Buster

Compact System Camera (CSC)

Cameras which offer interchangeable lenses while omitting the viewfinder and mirror box construction common to DSLR cameras. These include Sony's NEX series and Olympus's PEN range, as well as Nikon's 1 system and Samsung's NX line of models.

Digital Single Lens Reflex (DSLR)

A digital SLR camera, which is constructed around a mirror-box and pentamirror/pentaprism assembly, such as the Canon EOS 700D and Nikon D5300. These are popular among beginners, enthusiasts and

professionals, thanks to their wide compatibility with different lenses, manual control over exposure and ergonomics.

Compact camera

A small camera whose lens cannot be removed, in contrast to interchangeable-lens cameras such as DSLRs. These are often cheaper than CSC and DSLR cameras, although they usually have more limited functionality and smaller sensors.

Aperture

The aperture of a lens refers to the size of its opening which allows light through to the camera. This is created by a series of

blades inside the optic, and is usually regulated through the camera body, although some older lenses have physical aperture rings around their barrels. An aperture of f/2 or f/2.8 is classed as being large (or wide) because the opening itself is larger than those created by higher-number apertures such as f/16 or f/22.

Shutter speed

The length of time that the shutter inside the camera is open, exposing the sensor to light. Longer shutter speeds let in more light, and so are often required in low-light conditions, or when the intention is to blur certain elements in the scene. Faster shutter

speeds are ideal for freezing motion, such as when photographing sports.

Display

The rear panel on the back of a camera which shows captured images and videos, as well as the live feed from the sensor. These are usually TFT LCD types, although some cameras now make use of Organic Light Emitting Diode (OLED) alternatives. Resolution is usually specified in dots: compact camera displays often have 230k or 460k dots, while those displays that are on high-end enthusiast compacts, CSCs and DSLRs are usually 921k dots or even higher.

the kind of image quality that can be achieved.

CSCs

CSCs fit somewhere between compacts and DSLRs, with the benefit of a small-format body and interchangeable lenses. Due to their mirrorless designs, optical viewfinders are exchanged for electronic variants that continue to get better all the time in terms of their resolution and sharpness.

Due to the lack of an established form factor, unlike DSLRs, CSCs come in a wide variety of shapes and sizes. Most differences are aesthetic, but a fair few affect the handling quite significantly too. Some models have thin, wide bodies, while others are shaped like DSLRs to provide more to wrap your hand around.

DSLRs

DSLRs range from beginner models, such as the Canon EOS 1100D, up to professional level models, such as the same company's EOS-1D X. The body shape is similar throughout, with a large hand grip and dials on the top, although most professional DSLRs are more square than rectangular, with additional shutter release buttons and dials to make portrait-orientation shooting comfortable.

The addition of an optical viewfinder is one of the unique features that differentiates a

CSC

An interchangeable-lens camera with no optical viewing assembly but either an electronic one, or just the LCD screen to shoot with. CSCs come in a wide variety of forms with a wide range of sensor sizes, so image quality varies greatly between models.



PROS

Typically smaller than DSLRs, HD video, Interchangeable lenses, Great image quality for the size

CONS

Optical viewfinders usually not available, Lens ranges, Premium models can be expensive

DSLR

The choice of professionals, a DSLR features interchangeable lenses, plus an optical viewfinder that sees what the lens sees thanks to a 45° mirror and prism assembly inside the camera. The bulkiest camera type, but the full frame models deliver the highest image quality.



PROS

Interchangeable lenses, Manual exposure control, HD video, Excellent ergonomics

CONS

Large and heavy bodies, Expensive, Poor-quality kit lenses often supplied as standard

DSLR model from most CSCs and compact cameras.

The only models that buck this trend, and as a result can't quite be described as true DSLRs, are those in the Sony SLT range, whose models include the A58 and A77. The SLT construction uses a translucent mirror which means it does not need to move in order for light to pass through to the sensor, in contrast to DSLRs which flip their mirrors up at the point of exposure. As a result the burst rate is faster; with the likes of the A77 able to shoot at up to 12fps. The disadvantage, depending on

your preference, is the presence of an electronic, rather than optical, viewfinder.

There are essentially two kinds of sensor used in DSLRs: APS-C and full frame, although full frame sensors are starting to creep into some CSCs such as the Sony Alpha 7 and 7R.

Full frame is described as such because it's roughly the same size as a 35mm negative. APS-C sensors are smaller, and as a result they only use the central part of a lens, which in turn increases their effective focal length (reducing the angle of view). This is known as a 'crop factor'. Full frame lenses

do not apply a crop factor to lenses, and so they maintain the same angle of view and focal length as if they were used on a film SLR.

DSLRs and CSCs also attract the attention of videographers, given the proliferation of HD video functionality and the range of lenses available. Many DSLRs – particularly those aimed towards a more discerning audience – also now incorporate ports for external microphones and have a full complement of options for different frame rates and output options as well as control over audio recording.

Optical viewfinder

A viewfinder which relies on an optical, rather than electronic, construction. DSLRs are equipped with optical viewfinders, which present the view through the lens. Those on cheaper DSLRs are constructed with a hollow chamber with mirrored sides (penta-mirrors) while those on pricier models feature a ground glass prism (pentaprism) which is brighter.

Electronic viewfinder (EVF)

An electronic alternative to an optical viewfinder. These are typically integrated into bridge cameras and some Compact System Cameras, where an optical

viewfinder is either not possible or less desirable. More recent EVFs are constructed from OLED panels rather than LCDs, and some of these are surprisingly detailed and bright.

Sensor size

The physical size of the sensor inside a camera. Cameras with larger sensors often produce better-quality images than those with smaller ones, as each photosite is larger. A larger capacity allows its signal-to-noise ratio to be higher; as a result images stand a better chance of having a wider dynamic range and of being less affected by noise.

ISO

Also known as 'sensitivity', the ISO range of a camera determines its latitude for capturing images in different conditions. For a given camera, images captured at lower sensitivities generally contain less noise than those captured higher up, as the signal from the sensor – which contains unwanted noise – requires less amplification.

Burst rate

The speed at which a camera can fire consecutive frames, given in frames per second (fps). Many recent cameras have a standard fps rate which captures at the sensor's full resolution, with further faster

options which output images at a reduced pixel count. Often a camera's fastest burst mode will only be possible with focus and exposure taken from the first frame.

Neutral Density (ND) filter

ND filters are commonly used with DSLR cameras, although some enthusiast compacts now have these integrated into their lenses. Their purpose is to reduce exposure times, so that longer shutter speeds can be used, with the 'neutral' part of their name signifying that they are designed to have no effect on the colour balance of an image.

Camera Listings

If you want maximum control over your creative shooting options, you want an interchangeable-lens camera, whether a DSLR model or a Compact System Camera model. Here we list and rate all the models on the market

DSLRs

DSLRs									Screen mtk input	AF Points	Burst mode (FPS)	Viewfinder (%)	Built-in Wi-Fi	Built-in GPS	Flash	Articulated LCD	Touchscreen	Battery life (Shots)	Width (mm)	Height (mm)	Depth (mm)	Weight
NAME & MODEL	RRP	TESTED	SCORE	SUMMARY	SENSOR	LENS	MAX ISO	VIDEO	SHOOTING				SCREEN			DIMENSIONS						
Canon EOS 1200D	£450	06/14	4★	Entry level update to Canon's 1100D, the 1200D excels in the key areas of AF speed and accuracy while ISO performance is good	16MP	Canon	12,800	1080p	9	3	95			•	3in		500	129.6	99.7	78	480g	
Pentax K-500	£450	10/13	4★	Stripped-down version of K-500 without weather sealing boasts 100% glass prism viewfinder, uses AA batteries	16.3MP	Pentax	51,600	1080p	11	6	100			•	3in		410	130	97	71	646g	
Sony Alpha 58	£450	07/13	4★	Replacement for A57 boasts Bionz image processing engine, OLED viewfinder, plus 20MP sensor – up from 16MP	20.1MP	Sony	16,000	1080p	15	5	100			•	2.7in	•	690	129	95.5	78	492g	
Pentax K-S1	£550	03/15	4★	The fully-specified K-S1 boasts excellent image quality, while still being a lightweight, compact and portable option	12.1MP	Pentax	51,200	1080p	•	11	5.4	100			•	3in		tbc	92.5	120	69.5	498g
Canon EOS 750D	£599	08/15	4★	A new addition to the EOS line-up, the 750D is designed for EOS newcomers, with a non-threatening layout	24.2MP	Canon	25,600	1080p	19	5	95	•		•	3in	•	•	440	131.9	100.7	77.8	555g
Nikon D3300	£600	04/14	4.5★	Nikon's new entry-level DSLR is smaller than previous offerings while a sensor with no anti-aliasing filter means detail is high	24.2MP	Nikon	25,600	1080p	•	11	5	95			•	3in		700	124	98	75.5	460g
Pentax K-30	£600	03/14	4★	Stellar image quality make this a welcome alternative to Canon, Nikon and Sony offerings at the price	16.3MP	Pentax	25,600	1080p	11	6	100			•	3in		410	96.5	128.5	71.5	660g	
Pentax K-50	£600	10/13	4.5★	Replacement for K-30 offers 16MP sensor, weather sealing and improved processing. Still able to shoot at up to 6fps	16.3MP	Pentax	51,200	1080p	11	4	100			•	3in		410	130	97	71	650g	
Canon EOS 760D	£649	10/15	5★	A new addition to the EOS line-up, the 760D leans towards the aspiring enthusiast photographer	24.2MP	Canon	25,600	1080p	19	5	100	•		•	3in	•	•	440	131.9	101	77.8	565g
Pentax K-S2	£649	Web	4.5★	Pentax's latest mid-range DSLR continues its tradition of offering affordable yet well-specified cameras	20.2MP	Pentax	51,200	1080p	•	11	5.4	100	•		•	3in	•	410	122.5	91	72.5	678g
Nikon D3200	£650	07/12	4.5★	With a 24MP sensor and excellent Guide mode, this is the perfect entry-level DSLR. Wi-Fi & GPS optional	24.2MP	Nikon	12,800	1080p	•	11	4	95			•	3in		540	125	96	76	505g
Canon EOS 100D	£650	07/13	4.5★	Billed as the world's smallest and lightest DSLR; kit lens is the company's EF-S 18-55 f/3.5-5.6 IS STM zoom. GPS optional	18MP	Canon	12,800	1080p	•	9	4	95			•	3in		380	117	91	69	407g
Nikon D5200	£720	03/13	4.5★	Inspired by the D5100 and D7000, the D5200 has a vari-angle LCD, 24MP sensor and HD video. Wi-Fi & GPS optional	24.1MP	Nikon	25,600	1080p	•	39	5	95			•	3in	•	n/a	129	98	78	555g
Nikon D5500	£720	04/15	4.5★	New DX-format DSLR in Nikon's 'advanced beginner' range, updating the impressive D5300 and adding a touchscreen	24.2MP	Nikon	25,600	1080p	•	39	5	95	•		•	3.2in	•	820	124	97	70	470g
Canon EOS 60D	£750	09/12	4.5★	Still current in the company's DSLR range, this semi-pro design packs in an 18MP CMOS sensor and a vari-angle screen	18MP	Canon	25,600	1080p	•	9	5	96				3in	•	1,100	145	106	79	755g
Canon EOS 700D	£750	Web	4.5★	Update to 650D comes bundled with a new 18-55mm STM kit lens, that promises improved movie AF. GPS & Eye-Fi optional	18MP	Canon	12,800	1080p	•	9	5	95			•	3in	•	440	133	100	79	580g
Pentax K-3 II	£769	NYT		Ricoh has updated the Pentax K-3 with the K-3 II. The K-3 II is designed to be the flagship Pentax APS-C DSLR	24.3MP	Pentax	51,200	1080p	•	27	8.3	100	•		•	3.2in		tbc	131.5	102.5	77.5	785g
Sony Alpha 65	£790	02/12	4.5★	Featuring the same sensor as the A77, the A65 can rattle off 10 frames per second and has a crisp electronic viewfinder	24.3MP	Sony	16,000	1080p	•	15	10	100	•		•	3in		440	132	98	81	543g
Nikon D5300	£830	01/14	4.5★	Update on the D5200 with large sensor, larger screen, HD video, and long lasting battery, should appeal to videographers	24.2MP	Nikon F	25,600	1080p	•	23	5	95	•		•	3.2in	•	700	125	98	76	530g
Pentax K-5 II	£870	03/13	4.5★	Latest update to K-5 promises improved AF performance in low light and subject tracking with moving subjects	16.3MP	Pentax	51,200	1080p	•	11	7	100			•	3in		980	131	97	73	760g
Nikon D7200	£939	06/13	4★	Nikon's latest mid-range DSLR offers impressive new features over the D7100 it replaces at the top of Nikon's DX format range	24.2MP	Nikon F	25,600	1080p	•	51	6	100	•		•	3.2in		1,100	135.5	106.5	76	765g
Pentax K-3	£950	01/14	4★	Upgrade from Pentax K-5. GPS optional. Impersonates a low pass filter. High FPS rate and is the first to carry Ricoh's name	24.2MP	Pentax	51,200	1080i	•	27	8	100			•	3.2in		560	131	100	77	800g
Sony Alpha 77 MkII	£1000	09/14	4.5★	With the mkII Sony has brought built-in Wi-Fi, great handling and an enhanced AF that will suit sports and wildlife shooters	24.3MP	Sony	25,600	1080p	•	79	12	100	•		•	3in		480	142.6	104	81	647g
Nikon D7000	£1100	01/11	4.5★	A semi-pro DSLR offering some fantastic features and which still has everything an aspiring photographer would need	16MP	Nikon	25,600	1080p	•	39	6	100			•	3in		1,050	132	105	77	690g
Canon EOS 70D	£1100	11/13	4.5★	World's first DSLR to boast Dual Pixel CMOS AF technology, giving the best autofocus performance for a DSLR during live view	20.2MP	Canon	12,800	1080p	•	19	7	98	•		•	3in	•	920	139	104	79	755g
Nikon D7100	£1100	05/13	4.5★	The D7100 updates the D7000 in several significant ways, and while not without fault it's still praiseworthy. Wi-Fi optional	24.1MP	Nikon	25,600	1080p	•	51	6	100			•	3in		950	135	106	76	765g
Canon EOS 7D MkII	£1599	01/15	4.5★	A better sensor and improved AF over the 7D; this is one of the best APS-C DSLRs for enthusiasts and pros. Wi-Fi optional	20.2MP	Canon	51,200	1080p	•	65	10	100			•	3in		670	148.6	112.4	78.2	910g
Canon EOS 6D	£1700	02/13	4.5★	Superb image quality from Canon's latest – and cheapest – full-frame DSLR. Also offers Wi-Fi and GPS connectivity	20.2MP	Canon	102,400	1080p	•	11	4.5	97	•		•	3in		980	145	111	71	755g
Nikon D610	£1800	12/13	5★	Upgrade from D600: improved auto white balance, faster continuous shooting and a quiet continuous mode. GPS optional	24.3MP	Nikon	25,600	1080p	•	39	6	100			•	3.2in	•	900	141	113	82	850g
Sony Alpha 99	£1800	Xmas12	4★	Sony's full-frame A99 offers translucent mirror technology allied to a 19-point AF system with 11 cross sensors	24.3MP	Sony	25,600	1080p	•	19	10	100			•	3in	•	500	147	111	78	812g
Nikon D750	£1800	12/14	5★	The D750 is one of the very best all-round enthusiast DSLRs currently available, with an impressive performance	24.3MP	Nikon	51,200	1080p	•	51	6.5	100	•		•	3.2in	•	1,230	140.5	113	78	840g
Nikon D800	£2600	06/12	5★	Offering a massive 36MP, this is the camera to go for if you want to produce ultra-large prints. GPS optional	36.3MP	Nikon	25,600	1080p	•	51	4	100			•	3.2in		900	146	123	81	900g
Nikon DF	£2600	02/14	4★	Nikon's retro-tinged full-frame DSLR has a solid spec although it lacks a video mode. Overall, its images are superb	16.2MP	Nikon	204,800	-	39	5.5	100				3.2in		1,400	143.5	110	66.5	765g	
Nikon D810	£2699	11/14	5★	Replacing the D800 and D800E, the D810 is a truly welcome upgrade and one of the very best DSLRs on the market	36.3MP	Nikon	51,200	1080p		51	12	100			•	3.2in		1,200	146	123	82	980g
Nikon D800E	£2600	08/12	4.5★	Removes the anti-aliasing filter of the D800 for even greater detail should you need it. GPS optional	36.3MP	Nikon	25,600	1080p	•	51	4	100			•	3.2in		900	146	123	81	900g
Canon EOS 5D Mk III	£2999	06/12	5★	An excellent full frame sensor, fast burst rate, high ISO range and advanced AF make this an impressive piece of kit. Wi-Fi optional	22.3MP	Canon	102,400	1080p	•	61	6	100				3.2in		950	152	116	76	950g
Canon EOS 5DS	£2999	NYT		New full-frame DSLR that builds on the great success of its EOS 5D Mark III, which sports a world-first 50.6MP full frame sensor	50.6 MP	Canon	12,800	1080p	•	61	5	100				3.2in		700	152	116.4	76.4	845g
Canon EOS 5DS R	£3199	09/15	5★	New 50MP full-frame DSLR, identical to the 5DS it was launched with except that it forgoes an optical low-pass filter	50.6 MP	Canon	12,800	1080p	•	61	5	100				3.2in		700	152	116.4	76.4	845g
Nikon D4S	£5290	Web	5★	Nikon's flagship DSLR, the D4S takes the best features of the D4 and improved the burst speed, AF and processing power	16.2MP	Nikon	409,600	1080p	•	51	11	100				3.2in		3,020	160	156.5	90.5	1,300g
Canon EOS-1D X	£5300	11/12	5★	A contender for the crown of best DSLR on the market, this camera is hard to fault. GPS & Wi-Fi optional	18.1MP	Canon	204,800	1080p	•	61	12	100				3.2in		1,120	158	163	82	1,100g

COMPACT SYSTEM CAMERAS

Compact System Cameras									Stereo mic input	AF Points	Burst (FPS)	Viewfinder	Built-in Wi-Fi	Built-in GPS	Flash	Articulated Touchscreen	Battery life (CIPA)	Width (mm)	Height (mm)	Depth (mm)	Weight		
Name & Model	RRP	Tested	Score	Summary	Sensor	Lens	Max ISO	Video	Shooting				Screen			Dimensions							
Sony Alpha 3000	£350	12/13	2.5★	Compact, affordable, and delivers DSLR-style results	20.1MP	Sony E	16,000	1080p	25	3.5	•				•	3in		480	128	91	84.5	353g	
Samsung NX3000	£350	10/14	4★	This may well be the best-value NX camera yet	20.3MP	Samsung	25,600	1080p	21	5		•				3in	•	370	117.4	66	39	266g	
Panasonic Lumix GF6	£400	Web	4★	Newly developed Venus Engine and a 180° tilt screen	16MP	Mic4/3	25,600	1080p	•	23	20		•		•	3in	•	•	340	111	65	38	323g
Pentax Q7	£400	11/13	3★	Extra large sensor and improved AF	12.4MP	Pentax	12,800	1080p		25	5				•	3in		250	102	58	34	200g	
Olympus PEN E-PM2	£400	Web	3★	Update to E-PM1 offers 16.1MP sensor	16.1MP	Mic4/3	25,600	1080p	•	35	8				•	3in	•	360	110	64	34	269g	
Samsung NX Mini	£400	Web	4★	The light and compact NX Mini is very impressive	21MP	Samsung	25,600	1080p		35	6		•		•	3in	•	530	119	62	22.5	196g	
Sony Alpha 5000	£420	Web	4★	Aims to compete with entry-level DSLRs	20.1MP	Sony	16,000	1080p		-	-				•	3in		-	110	63	36	296g	
Nikon 1 S1	£480	Web	4★	User-friendly with an uncluttered interface	10.1MP	Nikon 1	6400	1080p		135	60		•		•	3in		220	102	61	30	197g	
Olympus PEN E-PL5	£480	02/13	4★	One of the most competent CSCs at the price	16MP	Mic4/3	12,800	1080p	•	23	20		•		•	3in	•	•	360	110	64	34	261g
Olympus PEN E-PL7	£499	01/15	4★	High spec, compact size and superb image quality	16MP	Mic4/3	25,600	1080p		81	8		•		•	3in		350	114.9	67	38.4	357g	
Nikon 1 J4	£499	11/14	4★	Excellent shooting speed and AF performance	18.4MP	Nikkor 1	12,800	1080p	•	171	20		•			3in	•	300	99.5	60	28.5	192g	
Fujifilm X-A1	£500	12/13	4★	Virtually identical to X-M1, but with a standard sensor	16.3MP	Fuji X	25,600	1080p		41	5.6		•		•	3in	•	350	117	66.5	39	330g	
Samsung NX300	£530	06/13	4.5★	Company adds to its range of Wi-fi-enabled cameras	20.3MP	Samsung	25,600	1080p	105	8.6		•	•		•	3.3in	•	•	320	122	64	41	284g
Nikon 1 J3	£540	Web	3★	Boasts a 14.2MP sensor from range-topping V2	14.2MP	Nikon 1	6400	1080p		135	60				•	3in		220	101	61	29	244g	
Sony NEX-5T	£540	01/14	4★	APS-C sensor delivers DSLR results	16.1MP	Sony E	25,600	1080p		25	3		•		•	3in	•	•	330	111	59	39	276g
Sony Alpha 5100	£549	12/14	4★	One of the very best in class, in video and image quality	24MP	Sony E	25,600	1080p		179	6		•		•	3in	•	•	400	110	63	36	283g
Panasonic Lumix G6	£550	07/13	4.5★	DSLR-like performance and images	16MP	Mic4/3	25,600	1080p	•	23	7	•	•		•	3in	•	•	n/a	122	85	72	340g
Canon EOS M3	£599	07/15	4★	The M3 looks set to appeal to enthusiast photographers	24.3MP	Canon M	25,600	1080p	•	49	4.2		•		•	3in	•	•	250	110.9	68	44.4	366g
Panasonic Lumix GM1	£629	01/14	4.5★	Tiny, retro compact design is impressive	16MP	Mic4/3	25,600	1080p		23	5		•		•	3in	•		230	99	55	30	204g
Sony Alpha 6000	£670	06/14	4.5★	Class-leading AF and an impressive APS-C sensor	24MP	Sony	25,600	1080p		179	11	•	•		•	3in	•		310	120	67	45	344g
Panasonic Lumix G7	£679	08/15	4★	The G7 is Panasonic's fifth model to have video capture	16MP	Mic4/3	25,600	3840p			8	•	•		•	3in	•	•	360	124.9	86.2	77.4	
Fujifilm X-M1	£680	10/13	4★	Company's third CSC features X-mount lens mount	16.3MP	Fuji X	6400	1080p		54	5.6		•		•	3in	•		350	117	67	39	330g
Olympus OM-D E-M10	£699	05/14	4.5★	Maintains the high-end features of its OM-D siblings	16MP	Mic4/3	25,600	1080p	•	81	8	•	•		•	3in	•		320	119	82	46	396g
Canon EOS M	£700	XM4S12	4.5★	Shares much of its functionality with the EOS 650D DSLR	18MP	Canon M	25,600	1080p		31	4.3		•		•	3in	•		230	109	66.5	32	298g
Panasonic Lumix GM5	£749	01/15	4★	Small CSC with an electronic viewfinder	16MP	Mic4/3	25,600	1080p	•	23	5.8	•	•		•	3in	•		210	98.5	59.5	36	211g
Nikon 1 AW1	£749	12/13	3.5★	High-end CSC is waterproof and shockproof	14.2MP	Nikon 1	6400	1080p		41	15		•	•	•	3in			220	113	71.5	37.5	356g
Nikon 1 V2	£800	02/13	3.5★	Revamp for V1. Price includes 10-30mm kit lens	14.2MP	Nikon 1	6400	1080p	•	73	15		•		•	3in		n/a	109	82	46	277g	
Sony NEX-6	£800	01/13	4★	Excellent EVF and fast operation	16.1MP	Sony E	25,600	1080p	•	25	10	•	•		•	3in	•		360	120	67	43	287g
Olympus OM-D E-M5 mkII	£900	05/15	5★	Olympus's latest premium CSC boasts several improvements	16MP	Mic4/3	25,600	1080p	•	81	10	•	•			3in	•		750	123.7	85	44.5	469g
Panasonic Lumix GX7	£900	10/13	4.5★	With fast AF and tiltable EVF, delivers excellent results	16MP	Lumix G	25,600	1080p		23	40	•	•		•	3in	•	•	n/a	122.6	70.7	43.3	402g
Olympus PEN E-P5	£900	09/13	4.5★	No built-in EVF but has fast AF plus high quality images	16MP	Mic4/3	25,600	1080p		35	9		•	•	•	3in	•	•	330	122	69	37	420g
Samsung NX30	£900	Web only	4.5★	A DSLR-style CSC with a burst rate of up to 8fps	21MP	Samsung	26,500	1080p		247	8	•	•	•	•	3in			360	127	96	58	375g
Fujifilm X-T1	£1100	4/12	5★	One of the best premium CSCs on the market	16.3MP	Fuji X	51,200	1080p	•	49	8	•	•		•	3in	•		350	129	89.8	46.7	440g
Panasonic Lumix GH3	£1120	XM4S12	5★	Responsive touchscreen and superb video mode	16MP	Mic4/3	25,600	1080p	•	23	6	•	•		•	3in	•	•	540	133	93.4	82	470g
Fujifilm X-E1	£1149	01/13	4.5★	Solid build, retro design and high image quality	16MP	Fuji X	25,600	1080p		49	6		•		•	3in			350	129	75	38	350g
Olympus OM-D E-M5	£1150	5/12	4.5★	The re-imagining of the classic Olympus OM	16MP	Mic4/3	25,600	1080p	•	35	9	•	•		•	3in	•	•	tbc	121	89.6	41.9	373g
Fujifilm X-E2	£1200	02/14	4.5★	Has over 60 improvements on the X-E1	16.3MP	Fuji X	25,600	1080p	•	49	7	•	•		•	3in			350	129	75	37	350g
Samsung NX1	£1299	02/15	5★	The first camera with an APS-C BSI sensor is impressive	28.2MP	Samsung	25,600	4096p	•	205	15	•	•		•	3in		tbc	138.5	102.3	65.8	550g	
Panasonic Lumix GH4	£1300	07/14	4★	Both 4K video quality and still images are impressive	16MP	Mic4/3	25,600	4096p	•	49	12	•	•		•	3in	•	•	500	133	93	84	560g
Samsung Galaxy NX	£1300	10/13	4★	World's first 3G/4G Android CSC	20.3MP	Samsung	25,600	1080p	•	105	8.6	•	•	•	•	4.8in	•	-	137	101	26	495g	
Olympus OM-D E-M1	£1300	12/13	5★	Fully weather-proofed and Wi-fi enabled	16.8MP	Mic4/3	25600	1080p	•	81	10	•	•		•	3in	•	•	330	130	93.5	63	497g
Sony Alpha 7	£1300	01/14	4.5★	One of the lightest, smallest full-frame cameras	24.3MP	Sony E	25,600	1080p	•	117	5	•	•		•	3in	•		340	127	94	48	474g
Leica T	£1350	08/14	4★	Excellent image quality	16MP	Leica T	12,500	1080p		195	5		•		•	3.7in	•		134	69	33	384g	
Fujifilm X-Pro1	£1430	05/12	5★	Offers innovations including a hybrid viewfinder	16MP	Fuji X	25,600	1080p		49	6		•			3in			300	139	81.8	42.5	450g
Sony Alpha 7 II	£1498	03/15	5★	The full-frame A7 II is at the top of Sony's CSC range	24.3MP	Sony E	25,600	1080p	•	117	5	•	•		•	3in			350	126.9	95.7	59.7	556g
Sony Alpha 7R	£1700	02/14	4.5★	One of the lightest, smallest full-frame cameras	36.4MP	Sony E	25,600	1080p	•	25	4	•	•			3in	•		340	127	94	48	465g
Sony Alpha 7S	£2099	09/14	4.5★	The Sony Alpha 7S is the latest Sony full-frame CSC	12.4MP	Sony E	409,600	1080p	•	25	5	•	•			3in	•		380	127	94.4	48.2	489g

Lens Listings

A DSLR or Compact System Camera is hugely affected by the lens attached to the front, as the light hitting the sensor impacts focus, exposure and image quality. Cast your eyes over our lens listings to find out which is best for you before you make a purchase

BUILT-IN FOCUS MOTOR

Some lenses incorporate a motor within the lens to drive the autofocus, while others are powered by motors within the camera. The former will focus quicker than the latter. Canon lens motors are USM (Ultrasonic Motor), Sigma HSM (Hypersonic-Motor).

35mm Compatibility

Most digital sensors are smaller than 35mm, which is why lenses designed for digital can be smaller.

LENS MOUNTS

Each manufacturer has its own lens mount and most aren't compatible with one another. For example, a Canon DSLR can't use Nikon lenses, though you can use independent brands if you get them with the right mount.

FILTER THREAD

In order to correct for colour casts or create more contrast, a screw-in filter can be used. The thread at the front of the camera will have a diameter, in mm, which will allow you to attach a variety of filters or adapters to the lens.

MAGNIFICATION FACTOR

If you're changing from a 35mm SLR, your lenses won't provide the same field of view on a DSLR unless you have a "full-frame" model. So for Nikon, Pentax and Sony DSLRs, magnify the focal length by 1.5x to get a 35mm equivalent; for Canon 1.6x and Sigma 1.7x.



Maximum Aperture

Wider apertures mean you can use faster, motion-stopping shutter speeds.

Lens types explained



Fixed focal length (PRIME)

Fixed lenses offer wider maximum apertures and superior image quality. A 50mm lens is perfect for low light, 85-105mm is ideal for portraits, while a 300mm+ tele is for sports shooters.



Telephoto zoom

Telephotos are great for sport and wildlife, while short teles are good for portraits. Telephoto lenses magnify camera shake, so look for one with Image Stabilisation to ensure you achieve the sharpest shots possible.



Standard zoom

Most DSLRs come with a standard zoom which spans from moderate wideangle to short telephoto. These 'kit' lenses are fine for most purposes, but there are alternatives that offer superior image quality.



Superzooms

While they rarely compare with shorter lenses in image quality, a superzoom offers convenience. Great for travelling when you're conscious of weight, don't expect pin-sharp, aberration-free images.



Wideangle zoom

Wideangle lenses make subjects seem further away, enabling you to get more into the shot – perfect for landscapes and architecture. The most popular wideangle zooms are the 10-20mm and 12-24mm ranges.



Macro lenses

A true macro lens lets you reproduce your subject at life-size (1:1) or half life-size (1:2) on the sensor. Macro lenses come in various focal lengths and extension tubes can offer a greater magnification.

LENS SUFFIX GUIDE USED BY MANUFACTURERS

AD Tamron Anomalous Dispersion elements	DG Sigma's designation for all lenses	FE Tokina floating element lenses	N Nikon's Nano Crystal Coating	SWD Olympus Supersonic Wave Drive
AF-DC Nikon defocus feature	DI Tamron lenses for full-frame sensors	G Nikon lenses without an aperture ring	OS Sigma's Optically Stabilised lenses	SWM Nikon lenses with a Silent Wave Motor
AF-S Nikon lenses with Silent Wave Motor	Di-II Tamron lenses designed for APS-C	HF Sigma Helical Focusing	PRO Tokina's Professional range of lenses	TS-E Canon Tilt and Shift lens
APO Sigma Apochromatic lenses	DO Canon diffractive optical element lenses	HID Tamron's High Index Dispersion glass	RF Sigma & Nikon Rear Focusing	UD Canon Ultra Low Dispersion glass
ASL Tamron lenses featuring aspherical elements	DT Sony lenses for APS-C sized sensors	HLD Tokina low dispersion glass	SD Tokina's Super Low Dispersion element	USM Canon lenses with an Ultrasonic Motor
ASP Sigma lenses featuring aspherical elements	DX Nikon's designation for digital lenses	HSM Sigma's Hypersonic Motor	SDM Pentax's Sonic Direct Drive Motor	VC Tamron's Vibration Compensation
AT-X Tokina's Advanced Technology Extra Pro	ED Low Dispersion elements	IF Internal Focusing	SF Canon lenses with Softfocus feature	VR Nikon's Vibration Reduction feature
CRC Nikon's Close Range Correction system	EF Canon's full-frame lenses	IRF Tokina's Internal Rear Focusing lenses	SHM Tamron's Super Hybrid Mount	XR Tamron Extra Refractive Index glass
D Nikon lenses that communicate distance info	EF-S Canon lenses for APS-C sized sensors	IS Canon's Image Stabilised lenses	SIC Nikon's Super Integrated Coating	ZL Tamron's Zoom Lock feature
DA Pentax lenses optimised for APS-C sized sensors	EX Sigma's 'Excellent' range	L Canon's 'Luxury' range of lenses	SLD Sigma Super Low Dispersion elements	
DC Sigma's designation for digital lenses	FC Tokina's Focus Clutch Mechanism	LD Tamron Low Dispersion glass	SP Tamron's Super Performance range	
DF Sigma lenses with dual focus facility	FE Canon's fisheye lenses	M-OIS Mega Optical Image Stabilisation	SSM Sony/Minolta Supersonic Motor lenses	

CANON

LENS	RRP	TESTED	SCORE	SUMMARY	Image Stabilisation	MOUNT							Min Focus (cm)	Filter Thread (mm)	DIMENSIONS		
						Sony Alpha	Canon	Four Thirds	Nikon	Pentax	Sigma	Full Frame Only			Width (mm)	Height (mm)	Weight
EF 8-15mm f/4 L USM	£1499	NYT		Impressive-looking fisheye zoom lens from Canon		•							15	n/a	78.5	83	540g
EF-S 10-18mm f/4.5-5.6 IS STM	£299	11/14	4★	A superb ultra wideangle that's a must-have for anyone shooting landscapes and cityscapes	•	•							22	67	74.6	72	240g
EF-S 10-22mm f/3.5-4.5 USM	£990	9/09	4★	A good performer, with solid MTF curves and minimal chromatic aberration		•	•						24	77	83.5	89.8	385g
EF 11-24mm f/4L USM	£2799	NYT		Long-awaited by Canon full-frame users, this is the world's widest-angle rectilinear zoom lens		•	•				•		28	n/a	108	132	1180g
EF 14mm f/2.8 L II USM	£2810	7/10	4.5★	Impressive resolution at f/8 but less so wide open		•	•				•		20	n/a	80	94	645g
EF-S 15-85mm f/3.5-5.6 IS USM	£900	3/11	4★	4-stop image stabilisation and Super Spectra coatings, together with a useful range	•	•							35	72	81.6	87.5	575g
EF 16-35mm f/2.8 L II USM	£1790	6/10	4.5★	Mark II of above lens, and a good performer with strong results at f/8 in particular		•	•				•		28	82	88.5	111.6	635g
EF 16-35mm f/4L IS USM	£1199	9/14	4★	Versatile and with a useful IS system, this is a very good ultra-wideangle zoom for full frame cameras	•	•					•		28	77	82.6	112.8	615g
TS-E 17mm f/4 L	£2920	NYT		Tilt and shift optic with independent tilt and shift rotation and redesigned coatings		•	•				•		25	77	88.9	106.9	820g
EF 17-40mm f/4 L USM	£940	11/08	4★	Designed to match the needs of demanding professionals – and does so with ease		•	•				•		28	77	83.5	96.8	500g
EF-S 17-55mm f/2.8 IS USM	£795	2/13	4★	Very capable lens with three-stop image stabilisation, Super Spectra coating and a circular aperture	•	•							35	77	83.5	110.6	645g
EF-S 17-85mm f/4-5.6 IS USM	£600	11/08	3★	Doesn't really live up to its promises. The zoom range is excellent but there are better alternatives	•	•							35	67	78.5	92	475g
EF-S 18-55mm f/3.5-5.6 IS II	£220	11/08	3.5★	Given the low price of this zoom, its results are very impressive	•	•							25	58	68.5	70	200g
EF-S 18-135mm f/3.5-5.6 IS	£500	NYT		4-stop image stabilisation and automatic panning and tripod detection	•	•							45	67	75.4	101	455g
EF-S 18-200mm f/3.5-5.6 IS	£740	10/11	4★	Automatic panning detection (for image stabilisation) and a useful 11x zoom range	•	•							45	72	78.6	102	595g
EF 20mm f/2.8 USM	£610	NYT		Wideangle lens with a floating rear focusing system and a USM motor	•	•							25	72	77.5	70.6	405g
EF 24mm f/1.4 L II USM	£2010	NYT		Subwavelength structure coating, together with UD and aspherical elements	•	•							25	77	93.5	86.9	650g
EF 24mm f/2.8 IS USM	£750	05/13	4★	Small wideangle optic with image stabilisation	•	•							25	58	67.5	48.5	270g
TS-E 24mm f/3.5 L II	£2550	NYT		Tilt and shift optic with independent tilt and shift rotation and redesigned coatings		•	•				•		21	82	88.5	106.9	780g
EF 24-70mm f/2.8 L USM	£1540	7/09	4.5★	A solid performer with an excellent reputation that only years in the field can secure		•	•				•		38	77	83.2	123.5	950g
EF 24-70mm f/2.8 L II USM	£2300	XMAS 12	5★	Professional quality standard zoom lens with a fast aperture		•	•				•		38	82	88.5	113	805g
EF 24-70mm f/4 L IS USM	£1499	NYT		L-series zoom said to be compact, portable and aimed at both professionals and amateurs	•	•							38	77	83.4	93	600g
EF 24-105mm f/4 L IS USM	£1049	3/13	4.5★	An excellent all-round performer, and keenly priced too	•	•							45	77	83.5	107	670g
EF 24-105mm f/3.5-5.6 IS STM	£479	NYT		A versatile standard zoom lens that's an ideal route into full frame photography	•	•							40	77	83.4	104	525g
EF 28mm f/1.8 USM	£570	NYT		USM motor and an aspherical element, together with a wide maximum aperture	•	•							25	58	73.6	55.6	310g
EF 28mm f/2.8 IS USM	£730	05/13	3.5★	Lightweight and inexpensive lens, with a single aspherical element	•	•							30	52	67.4	42.5	185g
EF 28-135mm f/3.5-5.6 IS USM	£560	12/09	4.5★	Excellent optical performance, with the benefit of image stabilisation	•	•							50	72	78.4	96.8	540g
EF 28-300mm f/3.5-5.6 L IS USM	£3290	NYT		L-series optic with expansive range, image stabilisation and a circular aperture	•	•							70	77	92	184	1670g
EF 35mm f/2	£320	3/12	4.5★	A cut-price fixed focal length lens	•	•							25	52	67.4	42.5	210g
EF 35mm f/2 IS USM	£799	NYT		First 35mm prime from Canon to feature an optical stabilisation system	•	•							24	67	62.6	77.9	335g
EF 35mm f/1.4 L USM	£1720	NYT		L-series construction and a wide maximum aperture, with a ring-type USM	•	•							30	72	79	86	580g
EF 40mm f/2.8 STM	£230	NYT		A portable and versatile compact pancake lens. A fast maximum aperture enables low-light shooting	•	•							30	52	68.2	22.8	130g
EF 50mm f/1.2 L USM	£1910	NYT		Very wide maximum aperture and Super Spectra coatings, and a circular aperture	•	•							45	72	85.8	65.5	580g
EF 50mm f/1.4 USM	£450	2/10	5★	Brilliant performer, with a highly consistent set of MTF curves. AF motor is a tad noisy though	•	•							45	58	73.8	50.5	290g
EF 50mm f/1.8	£130	09/15	5★	Lightest EF lens in the range, with wide maximum aperture and a Micro Motor	•	•							45	52	68.2	41	130g
EF 50mm f/2.5 Macro	£350	NYT		Compact macro lens with floating system	•	•							23	52	67.6	63	280g
EF-S 55-250mm f/4-5.6 IS II	£330	1/12	4★	Ideal budget addition to the 18-55mm kit lens, with image stabilisation and USM	•	•							110	58	70	108	390g
EF-S 60mm f/2.8 Macro USM	£540	8/06	4★	Great build and optical quality, with fast, accurate and near-silent focusing	•	•							20	52	73	69.8	335g
MP-E65 f/2.8 1-5x Macro	£1250	NYT		Macro lens designed to achieve a magnification greater than 1x without accessories	•	•							24	58	81	98	710g
EF 70-200mm f/2.8 L USM	£1540	NYT		Non-stabilised L-series optic, with rear focusing and four UD elements	•	•							150	77	84.6	193.6	1310g
EF 70-200mm f/4 L IS USM	£1450	11/11	5★	A superb option for the serious sports and action photographer	•	•							120	67	76	172	760g
EF 70-200mm f/2.8 L IS II USM	£2800	10/10	5★	A great lens but also a costly one. Peak resolution at 0.4 cycles-per-pixel is simply amazing	•	•							120	77	88.8	199	1490g
EF 70-200mm f/4 L USM	£790	NYT		A cheaper L-series alternative to the f/2.8 versions available	•	•							120	67	76	172	705g
EF 70-300mm f/4.5-5.6 IS USM	£470	11/10	4★	A great level of sharpness and only the small apertures should be avoided	•	•							150	58	76	143	630g
EF 70-300mm f/4-5.6 L IS USM	£1600	7/11	5★	An L-series lens with a highly durable outer shell	•	•							120	67	89	143	1050g
EF 70-300mm f/4.5-5.6 DO IS USM	£1700	NYT		3-layer diffractive optical element and image stabilisation	•	•							140	58	82.4	99.9	720g
EF 75-300mm f/4-5.6 III	£300	NYT		Essentially the same lens as the 75-300mm f/4.0-5.6 III USM but with no USM	•	•							150	58	71	122	480g
EF 75-300mm f/4-5.6 III USM	£350	9/07	2.5★	Good but not outstanding. The inclusion of a metal lens mount is positive, though	•	•							150	58	71	122	480g
EF 85mm f/1.2 L II USM	£2640	8/06	4★	A well-crafted lens, with fast and quiet AF with good vignetting and distortion control	•	•							95	72	91.5	84.0	1025g
EF 85mm f/1.8 USM	£470	2/11	5★	Non-rotating front ring thanks to rear focusing system, as well as USM	•	•							85	58	75	71.5	425g
TS-E 90mm f/2.8	£1670	NYT		Said to be the world's first 35mm-format telephoto lens with tilt and shift movements	•	•							50	58	73.6	88	565g
EF 100mm f/2 USM	£559	NYT		A medium telephoto lens with a wide aperture, making it ideal for portraits	•	•							90	58	75	73.5	460g
EF 100mm f/2.8 Macro USM	£650	11/09	4★	A solid performer, but weak at f/2.8 (which is potentially good for portraits)	•	•							31	58	79	119	600g
EF 100mm f/2.8 L Macro IS USM	£1060	1/13	5★	Stunning MTF figures from this pro-grade macro optic	•	•							30	67	77.7	123	625g
EF 100-400mm f/4.5-5.6 L IS USM	£1940	NYT		L-series construction and optics, including fluorite and Super UD elements	•	•							180	77	92	189	1380g
EF 135mm f/2 L USM	£1360	NYT		L-series construction with two UD elements and wide maximum aperture	•	•							90	72	82.5	112	750g
EF 135mm f/2.8 SF	£520	NYT		Soft-focus feature with two degrees of softness	•	•							130	52	69.2	98.4	390g
EF 180mm f/3.5 L Macro USM	£1870	NYT		L-series macro lens with inner focusing system and USM technology	•	•							48	72	82.5	186.6	1090g
EF 200mm f/2 L IS USM	£7350	NYT		5-stop Image Stabilisation with tripod detection and Super Spectra lens coatings	•	•							190	52	128	208	2520g
EF 200mm f/2.8 L II USM	£960	NYT		Two UD elements and a rear-focusing system in this L-series optic	•	•							150	72	83.2	136.2	765g
EF 300mm f/2.8 L IS II USM	£7500	NYT		4-stop Image Stabilisation makes this lens perfect for action photography	•	•							200	52	128	248	2400g
EF 300mm f/4 L IS USM	£1740	NYT		Two-stop image stabilisation with separate mode for panning moving subjects	•	•							150	77	90	221	1190g
EF 400mm f/2.8 L IS USM	£9810	NYT		Super telephoto with ring-type USM, one fluorite element and image stabilisation	•	•							300	52	163	349	5370g
EF 400mm f/4 DO IS USM	£8000	NYT		Multi-layer diffractive optical element to correct for chromatic aberration	•	•							350	52	128	232.7	1940g
EF 400mm f/5.6 L USM	£1660	NYT		Super UD and UD elements, as well as a detachable tripod mount and built-in hood	•	•							350	77	90	256.5	1250g
EF 500mm f/4 L IS USM II	£5299	NYT		Full-time manual focus, a single fluorite element and dust and moisture protection	•	•							450	52	146	387	3870g

NIKON

NIKON					Image Stabilisation	Sony Alpha	Canon	Four Thirds	Nikon	Pentax	Sigma	Full Frame Only	Min Focus (cm)	Filter Thread (mm)	Width (mm)	Length (mm)	Weight
LENS	RRP	TESTED	SCORE	SUMMARY					MOUNT								DIMENSIONS
10-55mm f/2.8 G ED DX Fisheye	£678	NYT		DX format fisheye lens with Nikon's Close-Range Correction system and ED glass					•				14	n/a	63	62.5	300g
10-24mm f/3.5-4.5 G ED AF-S	£834	10/09	4★	MTF performance is good from wide open to f/11, only breaking down past f/22					•				24	77	82.5	87	460g
12-24mm f/4 G ED AF-S DX	£1044	9/09	4★	This venerable optic may be a little weak at f/4, but otherwise it's a good performer					•				30	77	82.5	90	485g
14mm f/2.8 D ED AF	£1554	7/10	5★	A really nice lens that handles well and offers excellent image quality					•		•		20	n/a	87	86.5	670g
14-24mm f/2.8 G ED AF-S	£1670	2/08	5★	A remarkable piece of kit, producing sharp images with little chromatic aberration					•		•		28	n/a	98	131.5	970g
16mm f/2.8 D AF Fisheye	£762	NYT		Full-frame fisheye lens with Close-Range Correction system and 25cm focus distance					•		•		25	n/a	63	57	290g
16-35mm f/4 G ED AF-S VR	£1072	6/10	5★	A fantastic lens that deserves to be taken seriously, with very little CA throughout		•			•				28	77	82.5	125	685g
16-85mm f/3.5-5.6 G ED VR AF-S DX	£574	3/11	4★	Boasting Nikon's second-generation VR II technology and Super Integrated Coating		•			•				38	67	72	85	485g
17-35mm f/2.8 D ED-IF AF-S	£1878	NYT		High-quality wideangle zoom for full-frame Nikon users					•		•		28	77	82.5	106	745g
17-55mm f/2.8 G ED-IF AF-S DX	£1356	3/07	4★	A higher quality standard zoom for DX-format DSLRs					•				36	77	86.5	110.5	755g
18-35mm f/3.5-4.5 G ED AF-S	£669	Xmas13	5★	Wideangle zoom with instant manual-focus override for full-frame DSLRs					•		•		28	77	83	95	385g
18-55mm f/3.5-5.6 G II AF-S DX	£156	12/08	3.5★	Entry-level standard zoom lens					•				28	52	73	79.5	265g
18-55mm f/3.5-5.6 G VR AF-S DX	£188	5/08	4★	An improvement over the above version, with excellent resolution the benefit of VR					•				28	52	70.5	74	205g
18-55mm f/3.5-5.6 G VR II AF-S DX	£229	NYT		Popular 3x zoom lens that is remarkably compact and lightweight, offering great portability		•			•				28	52	66	59.5	195g
18-105mm f/3.5-5.6 G ED VR AF-S DX	£292	8/12	4.5★	Kit lens for Nikon D90 & D7000 with Silent Wave Motor and Vibration Reduction					•			na	67	76	89	420g	
18-200mm f/3.5-5.6 G IF-ED AF-S	£762	10/11	4.5★	4-stop VR II system, two ED and three aspherical elements in this DX superzoom lens		•			•				50	72	77	96.5	560g
18-300mm f/3.5-5.6 G ED-IF VR	£850	12/12	4★	DX-format zoom lens with wideangle to super-telephoto reach		•			•				45	77	83	120	830g
18-300mm f/3.5-6.3 G ED VR	£849	NYT		New DX-format 16.7x zoom with super-telephoto reach – a compact 'walkabout' lens		•			•				48	67	78.5	99	550g
20mm f/2.8 D AF	£584	NYT		Compact wideangle lens with Nikon's Close-Range Correction system					•		•		25	62	69	42.5	270g
24mm f/2.8 D AF	£427	NYT		Compact wide lens with Close-Range Correction system					•		•		30	52	64.5	46	270g
24mm f/1.4 G ED AF-S	£1990	8/10	5★	Nothing short of stunning. Aside from its high price there is very little to dislike about this optic					•		•		25	77	83	88.5	620g
24mm PC-E f/3.5 D ED PC-E	£1774	NYT		Perspective Control lens with Nano Crystal Coating and electronic control over aperture					•		•		21	77	82.5	108	730g
24-70mm f/2.8 G ED AF-S	£1565	7/09	5★	An excellent set of MTF curves that show outstanding consistency, easily justifying the price of this lens					•		•		38	77	83	133	900g
24-85mm f/3.5-4.5 G ED VR	£520	XMAS 12	5★	FX-format standard zoom with Auto Tripod detection and VR					•				38	72	78	82	465g
24-120mm f/4 G ED AF-S VR	£1072	5/11	5★	Constant maximum aperture of f/4 and the addition of VR makes this a superb lens		•			•		•		45	77	84	103	710g
28mm f/1.8 G ED AF-S	£619	4/13	5★	If you crave a wide aperture and prefer a single focal length then this Nikon prime delivers					•		•		25	67	73	80	330g
28mm f/2.8 D AF	£282	NYT		Compact wideangle lens with a minimum focusing distance of 25cm					•		•		25	52	65	44.5	205g
28-300mm f/3.5-5.6 G ED AF-S VR	£889	1/13	4.5★	Technical testing shows this zoom to be, as Nikon claims, the 'ideal walkabout lens'		•			•		•		50	77	83	114	800g
35mm f/1.8 G AF-S DX	£208	3/12	5★	Designed for DX-format DSLRs, a great standard prime lens					•				30	52	70	52.5	200g
35mm f/1.8 G ED AF-S	£TBC	NYT		Fast FX-format prime lens with bright f/1.8 aperture. Versatile and lightweight					•				25	58	72	71.5	305g
35mm f/2 D AF	£324	9/08	3★	At wide-aperture settings this optic achieves respectable resolution, which decreases with aperture					•		•		25	52	64.5	43.5	205g
35mm f/1.4 G ED AF-S	£1735	9/12	5★	A Nano Crystal-coated lens designed for the FX range					•		•		30	67	83	89.5	600g
40mm f/2.8 G AF-S DX Micro	£250	12/11	5★	A budget-priced macro lens that delivers the goods on multiple fronts					•				20	52	68.5	64.5	235g
45mm PC-E f/2.8 D ED	£1774	NYT		Perspective Control lens with ED glass and Nano Crystal Coating					•		•		25	77	83.5	112	780g
50mm f/1.2	£855	NYT		Ultra-fast f/1.2 aperture prime lens					•				50	52	68.5	47.5	360g
50mm f/1.4 D AF	£292	2/10	5★	Entry-level prime puts in a fine performance while offering backwards compatibility with AI cameras					•		•		45	52	64.5	42.5	230g
50mm f/1.4 G AF-S	£376	2/10	5★	Internal focusing and superior AF drive makes this a good alternative to the D-series 50mm f/1.4		•			•		•		45	58	73.5	54	280g
50mm f/1.8 D AF	£135	NYT		Compact, lightweight, affordable prime, will stop down to f/22					•		•		45	52	63	39	160g
50mm f/1.8 G AF-S	£200	9/11	5★	A cut-price standard lens for FX shooters or a short telephoto on DX-format DSLRs					•		•		45	58	72	52.5	185g
55mm f/2.8 Micro	£625	NYT		Macro lens with 1/2 maximum reproduction ratio					•				25	52	63.5	62	290g
55-200mm f/4-5.6 G VR AF-S DX	£314	8/07	3.5★	Designed for DX-format cameras, with Vibration Reduction and SWM technology					•				110	52	73	99.5	335g
55-300mm f/4.5-5.6 G VR AF-S DX	£378	1/12	3★	Offers a wide telephoto coverage, but better options available					•				140	58	76.5	123	530g
58mm f/1.4 G AF-S	£1599	2/14	4★	FX-format full frame premium prime lens with large f/1.4 aperture					•		•		58	72	85	70	385g
60mm f/2.8 D AF Micro	£405	8/06	5★	Nikon's most compact Micro lens, with Close Range Correction (CRC) system					•		•		22	62	70	74.5	440g
60mm f/2.8 G ED AF-S Micro	£500	NYT		Micro lens with 1:1 repro ratio, as well as a Silent Wave Motor and Super ED glass					•		•		18	62	73	89	425g
70-200mm f/2.8 G ED VR II AF-S	£2085	10/10	5★	Very little to fault here, with stunning image quality and consistent results at different focal lengths		•			•		•		140	77	87	209	1540g
70-200mm f/4 G ED VR	£1180	7/13	5★	Latest 70-200mm offers third-generation VR and weight savings over its more expensive f/2.8 cousin		•			•		•		1000	67	78	178.5	850g
70-300mm f/4.5-5.6 G ED AF-S VR	£556	11/10	4★	Feature-packed optic, with a VR II system, 9-bladed diaphragm, SWM and ED glass		•			•		•		n/a	67	80	143.5	745g
80-400mm f/4.5-5.6 D ED VR AF	£1512	NYT		3-stop Vibration Reduction with panning detection and a nine-bladed diaphragm		•			•		•		230	77	91	171	1340g
85mm f/3.5 G ED AF-S DX VR	£522	NYT		DX-format Micro lens with a 1:1 reproduction ratio, VR II system and ED glass		•			•				28	52	73	98.5	355g
85mm f/1.4 G AF-S	£1532	2/11	5★	Fast mid-tele lens with an internal focusing system and rounded diaphragm					•		•		85	77	86.5	84	595g
85mm f/1.8 D	£385	NYT		Portable medium telephoto – ideal for portraits					•				85	62	71.5	58.5	380g
85mm f/1.8 G AF-S	£470	5/12	5★	Rear-focusing system and distance window in this medium telephoto lens					•		•		80	67	80	73	350g
105mm f/2.8 G AF-S VR II Micro	£782	11/09	4.5★	A very sharp lens, with swift and quiet focusing and consistent MFT results		•			•		•		31	62	83	116	720g
105mm f/2 D AF DC	£980	NYT		A portrait lens with defocus control					•		•		90	n/a	79	111	640g
135mm f/2 D AF DC	£1232	NYT		Defocus-Image Control and a rounded diaphragm in this telephoto optic					•		•		110	n/a	79	120	815g
180mm f/2.8 D ED-IF AF	£782	NYT		Useful telephoto length and internal focusing technology, together with ED glass					•		•		150	72	78.5	144	760g
200mm f/4 D ED-IF AF Micro	£1429	NYT		1:1 reproduction range in this Micro lens, with a Close-Range Correction system					•		•		50	62	76	104.5	1190g
200mm f/2 G ED AF-S VR II	£5412	NYT		A full-frame lens offering ghost-reducing Nano Crystal coating		•			•		•		190	52	124	203	2930g
300mm f/4 E PF ED VR AF-S	£1230	08/15	5★	Light, compact AF-S full-frame telephoto lens with ED glass elements		•			•		•		140	77	89	147.5	755g
300mm f/2.8 G ED AF-S VR II	£5209	NYT		This lens promises fast and quiet AF, and is fitted with Nikon's latest VR II system		•			•		•		230	52	124	267.5	2900g

OLYMPUS

OLYMPUS					Image Stabilisation											
LENS	RRP	TESTED	SCORE	SUMMARY	Sony Alpha	Canon	Four Thirds	Nikon	Pentax	Sigma	Full Frame Only	Min focus (cm)	Filter Thread (mm)	Width (mm)	Length (mm)	Weight
					MOUNT						DIMENSIONS					
7-14mm f/4 ED	£1900	6/08	5★	An excellently constructed objective, with image quality to match			•					25	n/a	86.5	119.5	780g
8mm f/3.5 ED Fisheye	£930	NYT		Diagonal fisheye lens, offering a 180° view and a splash-resistant construction			•					13	n/a	79	77	485g
9-18mm f/4-5.6	£640	9/09	4★	Good results up to f/11, past which point resolution drops a little			•					25	72	79.5	73	280g
12-50mm f/3.5-6.3 ED	£370	5/13	4★	Offers electromagnetic zoom mechanism plus variable zoom speed			•					20	72	57	83	211g
12-60mm f/2.8-4 ED SWD	£1130	11/08	4.5★	While not quite as consistent as the 14-54mm, this optic is perhaps more versatile			•					25	72	79.5	98.5	575g
11-22mm f/2.8-3.5	£1020	NYT		Wide angle (2x) addition to Olympus E-System lens range			•					28	72	75	92.5	485g
14-35mm f/2 ED SWD	£2400	NYT		Pro lens with Supersonic Wave Drive AF system and dust and splashproof casing			•					35	77	86	123	915g
14-42mm f/3.5-5.6 ED	£285	NYT		Small, light lens especially designed for the compact Four Thirds system standard			•					25	58	65	61	190g
14-54mm II f/2.8-3.5 II	£660	12/09	4★	An affordable lens with great resolution – only CA control lets it down a touch			•					22	67	74.5	88.5	440g
18-180mm f/3.5-6.3	£560	6/10	4★	A good performer everywhere except at 180mm, with a solid feel to it			•					45	62	78	84.5	435g
25mm f/2.8 Pancake	£270	9/08	3.5★	Excellent image quality from such a tiny optic, but the lens cap is a little fiddly			•					20	43	64	23.5	95g
35mm f/3.5 Macro	£270	NYT		Macro lens equivalent to 70mm on a full frame camera			•					14	52	71	53	163g
35-100mm f/2	£2630	NYT		One Super ED and four ED elements inside this telephoto optic			•					140	77	96.5	213.5	1650g
40-150mm f/4-5.6 ED	£300	NYT		ED and aspherical elements in this optic, together with an internal focusing system			•					90	58	65.5	72	220g
50mm f/2 ED Macro	£600	8/06	3.5★	A fast, high-quality lens, with excellent MTF curves and low chromatic aberration			•					24	52	71	61.5	300g
50-200mm f/2.8-3.5 ED SWD	£1300	NYT		Supersonic Wave Drive focusing system and an equivalent focal range of 100-400mm			•					120	67	86.5	157	995g
70-300mm f/4-5.6 ED	£450	NYT		Three ED elements and multi-coatings feature in this popular tele-zoom optic			•					96	58	80	127	620g
90-250mm f/2.8 ED	£6200	NYT		Dust and splashproof lens with 3 ED elements and a 180-500mm equivalent range			•					250	105	124	276	3270g
150mm f/2 ED	£2650	NYT		Splashproof telephoto lens with a wide maximum aperture			•					140	82	100	150	1610g
300mm f/2.8 ED	£7800	NYT		Splashproof telephoto lens with three ED elements and an inner focusing system			•				•	240	43	129	281	3290g

PENTAX

PENTAX					Image Stabilisation												
					Sony Alpha	Canon	Four Thirds	Nikon	Pentax	Sigma	Full Frame Only	Min Focus (cm)	Filter Thread (mm)	Width (mm)	Length (mm)	Weight	
LENS	RRP	TESTED	SCORE	SUMMARY	MOUNT							DIMENSIONS					
DA 10-17mm f/3.5-4.5 smc ED IF	£590	NYT		Fisheye zoom lens with Super Protection coating and Quick Shift manual focus						•		14	n/a	71.5	68	320g	
DA 12-24mm f/4 smc ED AL IF	£1050	NYT		Two aspherical elements, ELD glass and a constant aperture of f/4 in this wide zoom						•		30	77	83.5	87.5	430g	
DA 14mm f/2.8 smc ED IF	£730	7/10	4.5★	Best performance lies between f/5.6 and f/11, but good results can be had at f/4 too						•		17	77	83.5	69	420g	
DA 15mm f/4 smc ED AL Limited	£820	NYT		Limited edition lens with hybrid aspherical and extra-low dispersion elements						•		18	49	39.5	63	212g	
DA* 16-50mm f/2.8 smc ED AL IF SDM	£950	1/09	3.5★	A nice balance and robust feel, but poor sharpness at f/2.8 (which significantly improves from f/4 onwards)						•	•	30	77	98.5	84	600g	
DA 17-70mm f/4 smc AL IF SDM	£630	NYT		Featuring Pentax's Supersonic Direct-drive (SDM) focusing system						•		28	67	75	93.5	485g	
DA 18-55mm f/3.5-5.6 smc II ED AL IF	£220	1/09	3.5★	Something of a bargain. Only the maximum apertures and awkward manual focusing really let it down						•		25	52	68	67.5	220g	
DA 18-55mm f/3.5-5.6 smc AL WR	£229	NYT		A weather resistant construction and an aspherical element, as well as SP coating						•		25	52	68.5	67.5	230g	
DA 18-135mm f/3.5-5.6 DA ED DC WR	£600	6/11	3.5★	A weather resistant mid-range zoom lens						•		40	62	73	76	405g	
DA 18-270mm f/3.5-6.3 smc EDSDM	£699	NYT		15x superzoom for company's K-mount DSLRs featuring two extra-low dispersion (ED) elements						•		49	62	76	89	453g	
DA 20-40mm f/2.8-4 ED Limited DC WR	£829	NYT		With state-of-the-art HD coating, a completely round-shaped diaphragm, and weather-resistant						•		28	55	68.5	71	283g	
DA 21mm f/3.2 smc AL Limited	£600	NYT		This limited-edition optic offers a floating element for extra-close focusing						•		20	49	63	25	140g	
FA 31mm f/1.8 smc AL Limited	£1149	NYT		Aluminium body; when used on a Pentax DSLR offers a perspective similar to that of the human eye						•		30	58	68.5	65	345g	
DA 35mm f/2.8 smc Macro	£640	9/08	4.5★	Despite slight edge softness, this lens performs excellently and is a pleasure to use						•		14	49	46.5	63	215g	
DA 35mm f/2.4 smc DS AL	£180	3/12	5★	A budget price prime lens for beginners						•		30	49	63	45	124g	
DA 40mm f/2.8 smc Limited	£450	NYT		Pancake lens with SMC coating and Quick Shift focusing system						•		40	49	63	15	90g	
DA 40mm XS f/2.8 XS	£325	NYT		The world's smallest fixed focal length lens						•		40	N/A	62.9	9	52g	
FA 43mm f/1.9 smc Limited	£729	NYT		Focal length is ideal for portraits as well as everyday use, and features an smc multi-layer coating						•		45	49	27	64	155g	
FA 50mm f/1.4 smc	£399	NYT		High quality fast prime. The 'FA' indicates that its image circle covers the 35mm full-frame format						•		45	49	63.5	38	220g	
DA 50mm f/1.8 smc DA	£249	NYT		Affordable short telephoto lens ideal for portraits						•	•	45	52	28.5	63	122g	
DFA 50mm f/2.8 smc Macro	£550	NYT		Macro lens capable of 1:1 reproduction and with a Quick Shift focus mechanism						•	•	19	49	60	67.5	265g	
DA* 50-135mm f/2.8 smc ED IF SDM	£1200	11/12	4★	Constant f/2.8 aperture; well suited to portraiture and mid-range action subjects						•	•	100	67	76.5	136	765g	
DA 50-200mm f/4-5.6 smc ED WR	£210	NYT		Weather-resistant construction, Quick Shift focus system and an SP coating						•		n/a	49	69	79.5	285g	
DA* 55mm f/1.4 smc SDM	£800	2/10	4.5★	Even despite questions about the particular sample tested, this lens scores highly						•	•	45	58	70.5	66	375g	
DA 55-300mm f/4-5.8 smc ED	£370	10/12	4★	The lens boasts a useful focal range, as well as a dirt-resistant SP coating						•		140	58	75	111.5	440g	
DA 55-300mm f/4-5.8 ED WR	£399	NYT		Weatherproof HD telephoto lens featuring quick shift focusing system						•	•	140	58	71	111.5	466g	
DA 60-250mm f/4 smc ED IF SDM	£1450	10/12	4.5★	With a constant f/4 aperture and an ultrasonic motor for speedy focusing						•		110	67	167.5	82	1040g	
DA 70mm f/2.4 smc AL Limited	£600	NYT		Medium telephoto lens with an aluminium construction and a Super Protect coating						•		70	49	63	26	130g	
D-FA* 70-200mm f/2.8 ED DC AW	£1850	NYT		New addition to Pentax's high-performance Star (*) series developed for best image rendition						•	•	120	77	91.5	203	1755g	
FA 77mm f/1.8 smc Limited	£1050	NYT		With Pentax's Fixed Rear Element Extension focusing system for 'sharp, crisp images'						•	•	70	49	48	64	270g	
D-FA 100mm f/2.8 Macro	£700	NYT		Designed for both digital and film cameras, this macro lens boasts a 1:1 repro ratio						•	•	30	49	67.5	80.5	345g	
D-FA 100mm f/2.8 Macro WR	£680	11/12	5★	Street price makes this something of a bargain for a true macro offering full-frame coverage						•	•	30	49	65	80.5	340g	
FA 150-450mm f/4.5-5.6 ED DC AW	£2000	NYT		Super-telephoto lens with weather-resistance, designed to produce extra-sharp, high-contrast images						•	•	200	86	241.5	95	2000g	
DA* 200mm f/2.8 smc ED IF SDM	£1000	8/12	4.5★	SDM focusing system on the inside, and dirtproof and splashproof on the outside						•	•	120	77	83	134	825g	
DA* 300mm f/4 smc ED IF SDM	£1300	NYT		This tele optic promises ultrasonic focus and high image quality thanks to ED glass						•	•	140	77	83	184	1070g	
DA 560mm f/5.6 smc AW	£5999	NYT		Prime offering focal length of 859mm when mounted on Pentax K-mount DSLR. Treated with HD coating						•	•	560	112	130	522	3040g	

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D610 Body **£1184.00**
D610+24-85mm **£1599.00**



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D7200+18-105mm **£953.00**

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Nikon Lenses



Nikon 300mm
F4E PF ED VR
£1639.00

14-24mm F2.8G AF-S ED	£1315.00
16-35mm F4.0G AF-S ED VR	£829.00
18-35mm F3.5-4.5G AF-S ED	£519.00
18-200mm F3.5-5.6G AF-S VR II	£549.00
18-300mm F3.5-5.6G AF-S ED VR	£599.00
24-70mm F2.8G AF-S ED	£1199.00
28-300mm F3.5-5.6G AF-S VR	£659.00
70-200mm F2.8G AF-S VR II	£1579.00
70-200mm F4G AF-S ED VR	£889.00
80-400mm F4.5-5.6G ED VR	£1899.00

Fuji Lenses



Fujifilm XF 16-55mm
F2.8 WR
£753.00

14mm F2.8 XF	£648.00
18mm F2.8 XF	£359.00
23mm F1.4 XF	£649.00
27mm F2.8 Black or Silver XF	£292.00
35mm F1.4R XF	£379.00
56mm F1.2 XF	£729.00
56mm F1.2 XF APD	£999.00
60mm F2.4R Macro XF	£424.00
10-24mm F4 R XF	£709.00
18-135mm F3.5-5.6 WR	£579.00
50-140mm F2.8 WR OIS	£1099.00
50-230mm F4.5-6.7 OIS Black or Silver XC	£299.00
55-200mm F3.5-4.8 R LM OIS XF	£495.00

Zeiss Lenses



Otus 55mm F1.4
£3170.00

Distagon 15mm F2.8	£2352.00
Distagon 21mm F2.8	£1449.00
Distagon 28mm F2	£979.00
Planar 50mm F1.4	£559.00
Planar 85mm F1.4	£989.00
APO Sonnar 135mm F2	£1599.00
Makro-Planar 100mm F2	£1449.00
Otus 55mm F1.4	£3170.00

Canon Lenses

EF 50mm F1.4 USM	£238.00
EF 50mm F1.8 II	£68.00
EF-S 60mm F2.8 USM Macro	£318.00
EF 85mm F1.2L II USM	£1499.00
EF 100mm F2.8L IS USM Macro	£635.00
EF 8-15mm F4.0L USM Fisheye	£915.00
EF 16-35mm F2.8L USM II	£1083.00
EF 17-40mm F4.0L USM	£499.00
EF 24-70mm F4L IS	£699.00
EF 24-70mm F2.8L II USM	£1400.00
EF 24-105mm F4.0L IS USM	£727.00
EF 24-105mm F3.5-5.6 IS STM	£375.00
EF 70-200mm F2.8L IS USM II	£1499.00
EF 70-200mm F4.0L IS USM	£805.00
EF 70-300mm F4.0-5.6 IS USM	£368.00
EF 70-300mm F4.0-5.6L IS USM	£894.00
EF 100-400mm F4.5-5.6L IS USM II	£1999.00

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SAMYANG

LENS	RRP	TESTED	SCORE	SUMMARY	Image Stabilisation	MOUNT						Min focus (cm)	Filter Thread (mm)	DIMENSIONS		
						Sony Alpha	Canon	Four Thirds	Nikon	Pentax	Sigma			Width (mm)	Length (mm)	Weight
8mm f/3.5 UMC Fisheye CS II	£274	NYT		Wideangle fisheye lens designed for digital reflex cameras with APS-C sensors		•	•	•	•	•		30	N/A	75	77.8	417g
10mm f/ 2.8 ED AS NCS CS	£429	NYT		Features a nano crystal anti-reflection coating system and embedded lens hood		•	•	•	•	•		24	N/A	86	77	580g
14mm f/2.8 ED UMC	£279	NYT		Ultra wideangle manual focus lens; bulb-like front element means no filters can be used		•	•	•	•	•		28	N/A	94	87	552g
16mm f/2.0 ED AS UMC CS	£389	NYT		Ultra wideangle lens for digital reflex cameras and mirrorless compact cameras fitted with APS-C sensors		•	•		•	•		20	N/A	89.4	83	583g
24mm f/1.4 AS UMC	£499	NYT		Fast ultra wideangle manual focus lens comprising 13 lenses arranged in 12 groups		•	•	•	•	•		25	77	95	116	680g
24mm f/3.5 AS T-S ED AS UMC	£789	NYT		Wideangle tilt-shift prime featuring 16 glass elements and f/3.5 maximum aperture		•	•		•	•		20	82	110.5	113	680g
35mm f/1.4 AS UMC	£369	3/13	4.5★	While manual focus only, this prime impressed us in real-world use, making it something of a bargain		•	•	•	•	•		30	77	83	111	660g
35mm T1.5 AS UMC VDSLR	£419	NYT		VDSLR version of 35mm f/1.4 AS UMC with de-clicked aperture ring for silent operation when used for video			•		•	•		30	77	83	111	660g
85mm f/1.4 IFMC	£239	NYT		Short fast telephoto prime, manual focus, aimed at portrait photographers		•	•	•	•	•		100	72	78	72.2	513

SIGMA

LENS	RRP	TESTED	SCORE	SUMMARY	Image Stabilisation	MOUNT						Min focus (cm)	Filter Thread (mm)	DIMENSIONS		
						Sony Alpha	Canon	Four Thirds	Nikon	Pentax	Sigma			Width (mm)	Length (mm)	Weight
4.5mm f/2.8 EX DC	£739	NYT		Circular fisheye lens designed for digital, with SLD glass and a gelatin filter holder		•		•	•	•		13	n/a	76	77.8	470g
8mm f/3.5 EX DG	£799	NYT		The world's only 8mm lens equipped with autofocus also boasts SLD glass			•		•	•		13	n/a	73.5	68.6	400g
8-16mm f/4.5-5.6 DC HSM	£800	10/10	4★	Excellent performance at 8mm which sadly drops at the 16mm end		•	•	•	•	•		24	72	75	105.7	555g
10mm f/2.8 EX DC	£599	NYT		A Hyper Sonic Motor (HSM) and built-in hood in this diagonal fisheye lens			•		•	•		13	n/a	75.8	83	475g
10-20mm f/3.5 EX DC HSM	£650	3/10	5★	An absolute gem of a lens that deserves a place on every photographer's wish list		•	•		•	•		24	82	87.3	88.2	520g
10-20mm f/4-5.6 EX DG HSM	£550	8/09	5★	A fine all-rounder, thanks to MTF curves which stay above 0.25 cycles-per-pixel down to f/16		•	•	•	•	•		24	77	83.5	81	470g
12-24mm f/4.5-5.6 EX DC HSM	£868	8/09	4★	A tightly matched set of MTF curves, but APS-C users are advised to look at the 10-20mm instead		•	•		•	•		28	n/a	87	102.5	600g
15mm f/2.8 EX DG	£629	7/10	4★	This fisheye optic puts in a very solid performance – not to be dismissed as a gimmick!		•	•		•	•		15	n/a	73.5	65	370g
17-50mm f/2.8 EX DC OS HSM	£689	NYT		FLD and aspherical elements, a constant f/2.8 aperture and Optical Stabilisation		•	•		•	•		28	77	83.5	92	565g
17-70mm f/2.8-4 DC Macro OS HSM	£449	NYT		Redesign of this well-received lens launches the 'Contemporary' range and sees it in more compact form		•	•		•	•		22	72	79	82	470g
18-35mm f/1.8 DC HSM	£799	11/13	5★	Said to be the world's first constant f/1.8 zoom; DOF equivalent of constant f/2.7 on full frame			•		•	•		28	72	78	121	810g
18-200mm f/3.5-6.3 DC	£349	3/08	3★	Good CA control at 200mm but otherwise an average performer		•	•		•	•		45	62	70	78.1	405g
18-200mm f/3.5-6.3 DC OS	£449	3/08	4★	Excellent resolution and consistent performance, but control over CA could be a little better		•	•		•	•		45	45	79	100	610g
18-250mm f/3.5-6.3 DC OS HSM	£572	1/10	4.5★	A very capable set of MTF curves that only shows minor weakness at wide apertures		•	•		•	•		45	72	79	101	630g
18-250mm f/3.5-6.3 DC Macro OS HSM	£500	NYT		Ultra-compact 13.8x high zoom ratio lens designed exclusively for digital SLR cameras		•	•		•	•		35	62	73.5	88.6	470g
18-300mm f/3.5-6.3 DC Macro OS HSM	£499	NYT		Compact and portable high ratio zoom lens offering enhanced features to make it the ideal all-in-one lens		•	•		•	•		39	72	79	101.5	585g
24mm f/1.4 DG HSM A	£799	06/15	5★	The latest addition to Sigma's 'Art' line of high-quality fast primes			•		•	•		25	77	85	90.2	665g
24-70mm f/2.8 EX DG IF HSM	£899	8/09	5★	Not perfect, but an excellent alternative to Canon and Nikon's 24-70mm lenses, with great MTF curves		•	•		•	•		38	82	88.6	94.7	790g
24-105mm f/4 DG OS HSM A	£849	3/14	4.5★	Serious full frame alternative to own-brand lenses at a lower price but with no compromises in the build		•	•		•	•		45	82	89	109	885g
30mm f/1.4 EX DC HSM	£490	9/08	3★	A consistent performer, with slightly weaker but not unacceptable performance wide-open		•	•		•	•		40	62	76.6	59	430g
35mm f/1.4 DG HSM Art	£799	9/13	5★	Large aperture prime; first lens in company's 'Art' series		•	•		•	•		30	67	77	94	665g
50mm f/1.4 EX DC HSM	£459	2/10	5★	This lens may be priced above the norm, but it delivers results which are similarly elevated		•	•		•	•		45	77	84.5	68.2	505g
50mm f/1.4 DG HSM Art	£849	7/14	4★	This lens is a unique design that pays off in truly excellent image quality		•	•		•	•		40	77	85.4	100	815g
50-500mm f/4.5-6.3 DG OS HSM	£1499	4/11	4★	A 10x zoom range, SLD elements and compatibility with 1.4x and 2x teleconverters		•	•		•	•		50-180	95	104.4	219	1970g
70-200mm f/2.8 EX DG OS HSM	£1539	NYT		Two FLD glass elements, said to have the same dispersive properties as fluorite		•	•		•	•		140	77	86.4	197	1430g
70-300mm f/4-5.6 APO DG Macro	£235	NYT		A 9-bladed diaphragm and two SLD elements in this tele-zoom lens			•		•	•		95	58	76.6	122	550g
70-300mm f/4-5.6 DG Macro	£173	5/09	3★	Generally unremarkable MTF curves, and particularly poor at 300mm			•		•	•		95	58	76.6	122	545g
85mm f/1.4 EX DG HSM	£890	2/11	5★	The Sigma's resolution from f/4 to f/8 is excellent		•	•		•	•		85	77	86.4	87.6	725g
105mm f/2.8 EX DG OS HSM	£649	12/11	4.5★	An optically-stabilised macro lens		•	•		•	•		31.2	62	78	126.4	725g
120-300mm f/2.8 DG HSM	£3599	NYT		First lens in company's 'Sports' series; switch enables adjustment of both focus speed and focus limiter			•		•	•		150-250	105	124	291	TBA
150mm f/2.8 EX DG OS HSM	£999	NYT		A macro lens offering image stabilisation		•	•		•	•		38	72	79.6	150	950g
150-500mm f/5-6.3 DG OS HSM	£999	6/09	3★	Significant softness at wide maximum apertures for all focal lengths		•	•		•	•		220	86	94.7	252	1780g
150-600mm f/5-6.3 DG OS HSM S	£1599	1/15	4★	This portable, high-performance telephoto zoom from Sigma's Sports line is dust and splashproof		•	•		•	•		260	105	121	290.2	2860g
180mm f/2.8 EX DG OS HSM	£1499	4/13	5★	1:1 macro lens featuring three FLD glass elements and floating inner focusing system		•	•		•	•		47	86	95	204	1640g
300mm f/2.8 APO EX DG	£2899	NYT		Extra Low Dispersion (ELD) glass, multi-layer coatings and a Hyper Sonic Motor			•		•	•		250	46	119	214.5	2400g
300-800mm f/5.6 EX DG HSM	£6999	NYT		A constant aperture of f/5.6 throughout the expansive 300-800mm zoom range			•		•	•		600	46	156.5	544	5880g
500mm f/4.5 APO EX DG	£4799	NYT		Telephoto lens with multi-layer coatings to 'optimise the characteristics of DSLRs'		•	•		•	•		400	46	123	350	3150g
800mm f/5.6 APO EX DG	£5499	NYT		HSM and compatibility with Sigma's 1.4x EX APO and 2x EX APO teleconverters		•	•		•	•		700	46	156.5	521	4900g

SONY

LENS	RRP	TESTED	SCORE	SUMMARY	Image Stabilisation	MOUNT						Min Focus (cm)	Filter Thread (mm)	DIMENSIONS		
						Sony Alpha	Canon	Four Thirds	Nikon	Pentax	Sigma			Width (mm)	Length (mm)	Weight
11-18mm f/4.5-5.6 DT	£609	9/09	3★	A solid overall performance that simply fails to be outstanding in any way		•						25	77	83	80.5	360g
16mm f/2.8 Fisheye	£709	NYT		Fisheye lens with a close focusing distance of 20cm and a 180° angle of view		•						20	n/a	75	66.5	400g
16-35mm f/2.8 ZA SSM T*	£1729	9/09	4.5★	High-end Zeiss wideangle zoom lens ideal for full frame Alpha DSLRs		•						28	77	83	114	900g
16-50mm f/2.8 SSM	£569	4/12	4★	Bright short-range telephoto lens		•						100	72	81	88	577g
16-80mm f/3.5-4.5 ZA T*	£709	4/09	4.5★	Carl Zeiss standard zoom lens		•						35	62	72	83	445g
16-105mm f/3.5-5.6 DT	£559	3/09	3★	An ambitious lens that is good in parts. Quality drops off at 105mm		•						40	62	72	83	470g
18-135mm f/3.5-5.6 DT SAM	£429	NYT		A versatile zoom with Direct Manual Focus	•	•						45	62	76	86	398g
18-200mm f/3.5-6.3 DT	£509	4/08	3★	While the focal range is certainly useful, the lens is an overall average performer		•						45	62	73	85.5	405g
18-250mm f/3.5-6.3 DT	£559	1/10	3.5★	Good overall, but performance dips at longer focal lengths		•						45	62	75	86	440g
20mm f/2.8	£559	9/11	3.5★	Wideangle prime lens with rear focusing mechanism and focus range limiter		•						25	72	78	53.5	285g
24mm f/2 ZA SSM T*	£1119	NYT		An impressively bright wideangle Carl Zeiss lens		•						19	72	78	76	555g
24-70mm f/2.8 ZA SSM T*	£1679	7/09	5★	Carl Zeiss mid-range zoom lens with superb optics ideal for full frame Alpha DSLRs		•						34	77	83	111	955g
28-75mm f/2.8 SAM	£709	NYT		A constant f/2.8 aperture and a Smooth Autofocus Motor (SAM) in this standard zoom		•						38	67	77.5	94	565g
30mm f/2.8 DT SAM Macro	£179	3/12	4★	Macro lens designed for digital with 1:1 magnification and Smooth Autofocus Motor		•						12	49	70	45	150g
35mm f/1.4 G	£1369	NYT		With an equivalent focal length of 52.5mm, a wide aperture and aspherical glass		•						30	55	69	76	510g
35mm f/1.8 DT SAM	£179	NYT		Budget price indoor portrait lens		•						23	55	70	52	170g
50mm f/1.8 DT SAM	£159	3/10	4.5★	A very useful lens that performs well and carries a rock-bottom price tag		•						34	49	70	45	170g
50mm f/1.4	£369	2/10	5★	While this lens performs well overall, performance at f/1.4 could be better		•						45	55	65.5	43	220g
50mm f/1.4 ZA SSM	£1300	Web	4★	Carl Zeiss design said to be ideal for quality-critical portraiture and low-light shooting		•						45	72	81	71.5	518g
50mm f/2.8 Macro	£529	NYT		A macro lens with a floating lens element		•						20	55	71.5	60	295g
55-200mm f/4-5.6 DT SAM	£219	NYT		Designed for cropped-sensor DSLRs, with a Smooth Autofocus Motor		•						95	55	71.5	85	305g
55-300mm f/4.5-5.6 DT SAM	£309	NYT		Compact, lightweight telephoto zoom offering smooth, silent operation		•						140	62	77	116.5	460g
70-200mm f/2.8 G	£1889	NYT		Super Sonic Wave motor and a constant f/2.8 aperture in this pro-grade tele zoom		•						120	77	87	196.5	1340g
70-200mm f/2.8 G SSM II	£TBC	NYT		High-performance G Series telephoto zoom lens		•						120		87	196.5	1340g
70-200mm f/4 G OSS	£949	10/14	4★	Compact, lightweight telephoto zoom lens for full-frame E-mount bodies	•	•						100	72	80	175	840g
70-300mm f/4.5-5.6 G SSM	£869	12/10	3.5★	G-series lens with ED elements, Super Sonic wave Motor and a circular aperture		•						120	62	82.5	135.5	760g
70-400mm f/4-5.6 G SSM II	£1799	NYT		Redesign of original features a new LSI drive circuit and promises faster autofocus		•						150	77	95	196	1500g
75-300mm f/4.5-5.6	£219	8/12	3★	Compact and lightweight zoom with a circular aperture		•						150	55	71	122	460g
85mm f/1.4 ZA Planar T*	£1369	NYT		Fixed focal length lens aimed at indoor portraiture		•						85	72	81.5	72.5	560g
85mm f/2.8 SAM	£219	NYT		A light, low price portraiture lens		•						60	55	70	52	175g
100mm f/2.8 Macro	£659	NYT		Macro lens with circular aperture, double floating element and wide aperture		•						35	55	75	98.5	505g
135mm f/1.8 ZA Sonnar T*	£1429	NYT		A bright, Carl Zeiss portrait telephoto lens		•						72	77	84	115	1004g
135mm f/2.8 STF	£1119	NYT		Telephoto lens with defocus effects		•						87	80	80	99	730g

TAMRON

LENS	RRP	TESTED	SCORE	SUMMARY	Image Stabilisation	MOUNT						Min Focus (cm)	Filter Thread (mm)	DIMENSIONS		
						Sony Alpha	Canon	Four Thirds	Nikon	Pentax	Sigma			Width (mm)	Length (mm)	Weight
10-24mm f/3.5-4.5 SP AF Di II LD Asph. IF	£511	2/10	3.5★	Good consistency at 10mm and 18mm, but a steep decline at 24mm		•	•	•				24	77	83.2	86.5	406g
15-30mm f/2.8 SP Di VC USD	£950	07/15	4★	Excellent value, this is the only wideangle zoom with image stabilisation and an f/2.8 aperture	•	•	•	•				28	N/A	98.4	145	1100g
16-300mm f/3.5-6.3 Di II VC PZD Macro	£600	8/14	4★	Versatile megazoom, a very good all-in-one solution, as long as you won't need to enlarge to A2 size	•	•	•	•				39	67	99.5	75	540g
17-50mm f/2.8 SP AF XR Di II LD Asph. IF	£450	2/09	4.5★	Very good optical performance, which peaks at f/5.6-8		•	•	•	•			27	67	74	81.7	434g
17-50mm f/2.8 SP AF XR Di II VC LD Asph. IF	£541	4/10	4.5★	Very strong performance at longer focal lengths but weaker at the other end	•	•	•	•				29	72	79.6	94.5	570g
18-200mm f/3.5-6.3 AF XR Di II LD Asph. IF Macro	£306	3/08	3★	Excellent CA control in the centre, but unremarkable wideangle performance		•	•	•	•			45	62	73	83.7	423g
18-200mm f/3.5-6.3 AF XR Di II LD Asph. IF Macro	£550	NYT		A redefined all-in-one lens to replace a shorter kit lens		•	•	•	•			50	62	62	96.7	460g
18-270mm f/3.5-6.3 AF XR Di II LD Asph. IF Macro	£613	1/10	4.5★	Much better results at shorter focal lengths than longer ones, but still impressive		•	•	•	•			49	72	79.6	101	550g
18-270mm f/3.5-6.3 AF Di II VC LD PZD IF Macro	£663	10/11	3★	The next-generation incarnation offers a new form of ultrasonic engine	•	•	•	•				49	62	74.4	88	450g
24-70mm f/2.8 SP Di VC USD	£1099	10/12	5★	Fast zoom with image stabilisation for both full-frame and APS-C cameras	•	•	•	•				38	82	88.2	116.9	825g
28-75mm f/2.8 SP AF XR Di LD Asph. IF Macro	£460	NYT		Standard zoom with constant f/2.8 aperture and minimum focusing distance of 33cm		•	•	•	•			33	67	73	92	510g
28-300mm f/3.5-6.3 AF XR Di LD Asph. IF Macro	£664	NYT		A useful 10.7x zoom range and low-dispersion elements in this optic		•	•	•	•			49	62	73	83.7	420g
60mm f/2 SP AF Di II LD IF Macro	£550	12/10	5★	Macro lens designed for APS-C sensor cameras, with 1:1 reproduction ratio		•	•	•				23	55	73	80	400g
70-200mm f/2.8 SP AF Di LD IF Macro	£817	10/09	4★	No image stabilisation and no advanced AF system, but at this price it's a steal		•	•	•	•			95	77	89.5	194.3	1150g
70-200mm f/2.8 Di VC USD	£TBC	NYT		Compact yet full-size telephoto zoom with vibration compensation		•	•	•				130	77	85.8	188.3	1470g
70-300mm f/4-5.6 SP VC USD	£300	1/12	4★	Ultrasonic Silent Drive (USD) technology for focusing and Vibration Compensation		•	•	•	•			150	62	81.5	142.7	765g
70-300mm f/4-5.6 AF Di LD Macro	£170	11/10	3.5★	Low dispersion glass and compatible with both full-frame and cropped-sensor DSLRs		•	•	•	•			95	62	76.6	116.5	435g
90mm f/2.8 SP AF Di Macro	£470	11/09	4★	A very nice macro lens that is capable of producing some fine images		•	•	•	•			29	55	71.5	97	405g
90mm f/2.8 Di Macro 1:1 VC USD	£TBC	NYT		Redesign of the 90mm f/2.8 SP AF Di Macro; comes with vibration compensation		•	•	•	•			30	58	115	76.4	550g
150-600mm f/5-6.3 SP VC USD	£1150	6/14	4★	Longest focal length of any affordable enthusiast zoom on the market and produces excellent results	•	•	•	•				270	95	105.6	257.8	1951g
180mm f/3.5 SP AF Di LD IF Macro	£896	11/10	5★	Two Low Dispersion elements and internal focusing system in this 1:1 macro lens		•	•	•	•			47	72	84.8	165.7	920g
200-500mm f/5-6.3 SP AF Di LD IF	£1124	6/09	4.5★	A well-matched and consistent set of MTF curves, with good performance at f/8-11		•	•	•	•			250	86	93.5	227	1237g

TOKINA

LENS	RRP	TESTED	SCORE	SUMMARY	Image Stabilisation	Mount	Min Focus (cm)	Filter Thread (mm)	Width (mm)	Length (mm)	Weight
						Sony Alpha Canon Four Thirds Nikon Pentax Sigma Full Frame Only					
AT-X 107 (10-17mm) f/3.5-4.5 AF DX Fisheye	£550	NYT		Fisheye zoom lens with Water Repellent coating and Super Low Dispersion glass		•	14	n/a	70	71.1	350g
AT-X 116 (11-16mm) f/2.8 PRO DX	£515	6/12	4.5★	Wide zoom with a One-Touch Focus clutch mechanism and a constant f/2.8 aperture		•	30	77	n/a	89.2	560g
AT-X 12-28mm f/4 PRO DX	£529	NYT		Replacement for 12-24mm F4 wideangle zoom; for Nikon DX DSLRs		•	25	77	84	90	600g
AT-X 16-28mm f/2.8 PRO FX	£757	6/11	5★	A pro-end wideangle zoom aimed at full frame cameras		•	26	n/a	90	133	950g
AT-X 17-35mm f/4 PRO FX	£830	11/12	5★	One of the most capable super-wide zooms available, though only available in Canon and Nikon mounts		•	28	82	89	94	600g
AT-X 16.5-135 (16.5-135mm) f/3.5-5.6	£610	9/11	3.5★	Three aspherical and two SD elements, together with a useful focal range		•	50	77	84	78	610g
AT-X M100 (100mm) f/2.8 AF PRO D Macro	£360	11/09	4★	Some weaknesses wide-open, but reasonable MTF curves make this a decent optic		•	30	55	73	95.1	540g

ZEISS

LENS	RRP	TESTED	SCORE	SUMMARY	Image Stabilisation	Mount	Min Focus (cm)	Filter Thread (mm)	Width (mm)	Length (mm)	Weight
						Sony Alpha Canon Four Thirds Nikon Pentax Sigma Full Frame Only					
12mm f/2.8 Touit Distagon T*	£959	5/14	5★	Designed specifically for Sony NEX and Fujifilm X-series CSC cameras. Very impressive performance		•	18	67		68	270g
18mm f/3.5 ZF.2	£1150	8/10	5★	No AF, but the optical and build qualities of this lens are nothing short of stunning		•	30	82	84	87	470g
21mm f/2.8 Distagon T*	£1579	NYT		A wideangle lens that doesn't compromise on optical quality		•	30	82	87	84	510g
25mm f/2 Distagon T*	£1350	NYT		A landscape lens with a fast aperture		•	25	67	71	95	570g
25mm f/2.8 Distagon T*	£750	NYT		A macro lens offering unrivalled quality		•	17	58	83	55	480g
28mm f/2 Distagon T*	£850	NYT		For low light shooting the 28mm lens has plenty of potential		•	24	58	64	93	520g
32mm f/1.8 Touit Planar T*	£700	7/14	4.5★	Optimised for use with APS-C format sensors, a fast standard lens for Fujifilm X-series cameras		•	23	52	72	76	200g
35mm f/1.4 Distagon T*	£1600	NYT		Promises to produce some stunning bokeh effects		•	30	72	120	122	850g
35mm f/2 Distagon T*	£940	NYT		An extremely fast focusing lens		•	30	58	64	97	530g
50mm f/1.4 Planar T*	£650	NYT		A portrait lens in its element in low light		•	45	72	66	69	350g
50mm f/2 Makro-Planar	£665	NYT		A macro lens with impressive-looking levels of sharpness		•	24	67	72	88	530g
100mm f/2 Makro-Planar	£1399	NYT		A rapid-focus portrait lens		•	44	72	76	113	680g

CSC Lens Listings

The range of lenses for CSC models is constantly evolving, so you have a fairly good choice when it comes to lenses for your CSC

CANON CSC

LENS	RRP	TESTED	SCORE	SUMMARY	Image Stabilisation	Mount	Min Focus (cm)	Filter Thread (mm)	Width (mm)	Length (mm)	Weight
						Canon M Micro 4 Thirds Samsung NX Sony E Pentax Q Nikon 1 Fujifilm Mount Full frame only					
EF-M 18-55mm f/3.5-5.6 IS STM	£269	NYT		Compact and versatile zoom lens		•	25	52	61	61	210g
EF-M 11-22mm f/4-5.6 IS STM	£355	NYT		Ultra-wideangle lens with a compact, retractable lens design		•	15	55	61	58.2	220g
EF-M 22mm f/2 STM	£220	NYT		Small and bright wideangle pancake lens		•	15	43	61	23.7	105g
EF-M 55-200mm f/4.5-6.3 IS STM	£330	NYT		Telephoto zoom that takes you closer to the action		•	100	52	60.9	86.5	260g

FUJI CSC

LENS	RRP	TESTED	SCORE	SUMMARY	Image Stabilisation	Mount	Min Focus (cm)	Filter Thread (mm)	Width (mm)	Length (mm)	Weight
						Canon M Micro 4 Thirds Samsung NX Sony E Pentax Q Nikon 1 Fujifilm Mount Full frame only					
XF 10-24mm f/4 R OIS	£849	NYT		Ultra wideangle lens, minimal ghosting with Fujis HT-ETC multi-layer coating		•	24	72	78	87	410
XF 14mm f/2.8 R	£729	7/13	5★	Ultra wideangle prime, high resolution to all corners, performance justifies price tag		•	18	58	65	58.4	235g
XC 16-50 f/3.5-5.6 OIS	£359	NYT		Lightweight lens for mirrorless X-series offers 24-75mm equivalent zoom range		•	30	58	62.6	98.3	195g
XF 16-55mm f/2.8 R LM WR	£899	06/15	5★	A flagship XF standard zoom lens with a constant f/2.8 aperture and weather-resistance		•	60	77	83.3	106	655g
XF 18mm f/2 R	£430	6/13	4★	A compact, wideangle lens with a quick aperture		•	18	52	64.5	40.6	116g
XF 18-135mm f/3.5-5.6 R LM OIS WR	£699	Xmas14	4★	Weather-resistant zoom for Fujifilm X mount, designed to be the perfect partner for the Fujifilm X-T1		•	45	77	75.7	97.8	490g
XF 18-55mm f/2.8-4 R	£599	NYT		Short zoom lens with optical image stabilisation		•	18	58	65	70.4	310g
XF 23mm f/1.4 R	£649	NYT		Premium wide-angle prime lens with fast maximum aperture		•	28	62	72	63	300g
XF 27mm f/2.8	£270	NYT		A high-performance single-focal-length lens		•	60	39	23	61.2	78g
XF 35mm f/1.4 R	£439	6/13	4★	Shallow depth of field and bokeh effects are simple to achieve with this lens		•	28	52	65	54.9	187g
XF 50-140mm f/2.8 R LM OIS WR	£1249	NYT		A telephoto zoom with a constant maximum aperture and weather-resistance		•	100	72	82.9	175.9	995g
XC 50-230mm f/4.5-6.7 OIS	£315	NYT		The XC lens range is designed to suit Fuji's mid range CSCs, and this lens has optical image stabilization		•	110	58	69.5	111	ttbc
XF 55-200mm f/3.5-4.8 R LM OIS	£599	11/13	4★	Telephoto with built-in optical image stabilisation plus aperture control ring		•	110	62	118	75	580g
XF 56mm f/1.2 R	£899	9/14	4★	This wide-aperture portrait lens for X series cameras has great sharpness and detail and is great value		•	70	62	73.2	69.7	405g
XF 56mm f/1.2 R APD	£1090	NYT		Medium-telephoto prime lens, with fast f/1.2 lens and built-in APD filter producing creamy bokeh		•	70	62	73.2	69.7	405g
XF 60mm f/2.4 XF R Macro	£599	NYT		A short telephoto lens perfect for macro work		•	26.7	39	64.1	70.9	215g

NIKON CSC

LENS	RRP	TESTED	SCORE	SUMMARY	Image Stabilisation	Mount	Min Focus (cm)	Filter Thread (mm)	Width (mm)	Length (mm)	Weight
					Canon M	Micro 4 Thirds					
6.7-13mm f/3.5-5.6 VR 1	£459	NYT		Compact, lightweight, ultra-wide angle zoom lens with Vibration Reduction for Nikon 1 system	•		25	52	56.5	46	125g
10mm f/2.8	£229	2/12	4★	A wideangle lens for Nikon's 1 series of Compact System Cameras	•		20	40.5	55.5	22	77g
10-30mm f/3.5-5.6 VR	£149	NYT		Nikon's kit lens for the 1 series of CSC models	•		20	40.5	57.5	42	115g
10-100mm f/4.5-5.6 VR PD-ZOOM	£679	NYT		A powered zoom lens aided by the VR image stabilisation system on 1 system compact	•		300	72	77	95	530g
10-100mm f/4-5.6 VR 1	£499	NYT		CX-format zoom lens with focal length range of 10-100mm (27-270mm 35mm equivalent)	•		35	55	60.5	70.5	298g
11-27.5mm f/3.5-5.6	£179	NYT		Compact standard zoom for Nikon 1 system	•		30	40.5	57.5	31	80g
18.5mm f/1.8	£179	NYT		Nikon's 1 series gains a traditional fast prime	•		20	40.5	56	36	70g
30-110mm f/3.8-5.6 VR	£229	NYT		A longer zoom lens, with image stabilisation, for the Nikon 1 series	•		100	40.5	60	61	180g
32mm f/1.2	£799	NYT		First 1 system lens to offer a silent wave motor and nano crystal coating	•		45	52	66	47	235g
70-300mm f/4.5-5.6 VR	£TBC	NYT		CX-format super-telephoto lens with a surprisingly compact body	•		7	62	73	108	550g

OLYMPUS CSC

LENS	RRP	TESTED	SCORE	SUMMARY	Image Stabilisation	Mount	Min Focus (cm)	Filter Thread (mm)	Width (mm)	Length (mm)	Weight
					Canon M	Micro 4 Thirds					
9-18mm (Micro) f/4-5.6 ED	£630	NYT		This super wideangle lens offers an equivalent focal range of 18-36mm in 35mm terms		•	25	52	56.5	49.5	155g
12mm (Micro) f/2.0 ED	£739	1/12	5★	A wideangle fixed lens for the Micro Four Thirds system		•	20	46	56	43	130g
12-40mm f/2.8	£899	NYT		Weather-resistant wideangle zoom with a constant aperture of f/2.8		•	20	62	69.9	84	382g
12-50mm (Micro) f/3.5-6.3 ED EZ	£349	NYT		A reasonably-priced MFT zoom lens		•	20	52	57	83	211g
17mm M.Zuiko f/1.8 MSC	£450	7/13	5★	Wide-aperture, wide-angle prime boasting excellent peak sharpness and no colour fringing		•	25	46	57	35	120g
17mm (Micro) f/2.8 Pancake	£300	5/10	4★	Results are impressive across the most-used apertures given the wide angle of view offered		•	20	37	57	22	71g
14-42mm (Micro) f/3.5-5.6 ED	£300	5/10	4★	Generally a good performer, but control over chromatic aberrations could be a little better		•	25	40.5	62	43.5	150g
14-42mm II R (Micro) f/3.5-5.6 II	£269	NYT		A redesigned variation of the standard kit lens		•	25	37	56.5	50	112g
14-150mm (Micro) f/4-5.6 ED	£630	NYT		Plenty of focal range is offered by this MFT lens		•	50	58	63.5	83	280g
14-150mm f/4-5.6 II	£550	NYT		High-powered zoom for all your needs – from wideangle to telephoto – plus weather-resistance		•	50	58	63.5	83	285g
25mm f/1.8	£370	NYT		Compact prime lens with ultra-bright f/1.8 aperture	•	•	25	46	57.8	42	137g
40-150mm f/2.8 ED	£1299	03/15	4★	This powerful 80-300mm 35mm equivalent focal length lens offers amazing portability for this pro class		•	70	72	79.4	160	760g
40-150mm R (Micro) f/4-5.6	£309	NYT		This middle-distance zoom lens has an 80-300mm 35mm equivalent focal length		•	90	58	63.5	83	190g
45mm (Micro) f/1.8	£279	2/12	5★	Fast-aperture lens for taking portrait shots proved to be sharp, quiet and without colour fringing		•	50	37	56	46	116g
60mm f/2.8 Macro	£450	NYT		High-precision macro lens that's dustproof and splashproof		•	19	46	56	82	185g
75-300mm II (Micro) f/4.8-6.7	£499	NYT		Update featuring Zuiko Extra-low Reflection Optical coating said to reduce ghosting		•	90	58	69	117	423g
75mm f/1.8 ED	£799	8/13	5★	Ultra-fast prime lens ideal for portraits and action shots		•	84	58	64	69	305g

PANASONIC CSC

LENS	RRP	TESTED	SCORE	SUMMARY	Image Stabilisation	Mount	Min Focus (cm)	Filter Thread (mm)	Width (mm)	Length (mm)	Weight
					Canon M	Micro 4 Thirds					
G 7-14mm f/4	£1300	5/10	5★	For a wideangle zoom, the overall level of resolution is very impressive		•	25	-	70	83.1	300g
G 8mm Fisheye f/3.5	£730	NYT		The world's lightest and smallest fisheye lens for an interchangeable lens camera		•	10	22	60.7	51.7	165g
G 12mm 3D Lens f/12	£320	NYT		Allows compatible cameras to shoot 3D images		•	60	-	57	81.8	45g
G 12-32mm f/3.5-5.6 MEGA OIS	£270	NYT		Very compact with a versatile zoom range and 3 aspherical lenses	•	•	20	37	55.5	24	70g
G X 12-35mm f/2.8 X PZ POWER OIS	£1095	10/12	5★	Fast, high-quality standard zoom for Micro Four Thirds cameras	•	•	25	58	67.6	73.8	305g
G 14mm f/2.5	£249	NYT		Wideangle pancake lens which should suit landscape photographers		•	18	46	55.5	20.5	55g
G 14-42mm II f/3.5-5.6 MEGA OIS	£375	NYT		Addition of two aspherical elements helps make this lens smaller than previous version	•	•	20	46	56	49	110g
G X 14-42mm f/3.5-5.6 X PZ POWER OIS	£369	2/13	4★	Powered zoom; impressive results in terms of both sharpness and chromatic aberration	•	•	20	37	61	26.8	95g
G 14-45mm f/3.5-5.6 MEGA OIS	£189	NYT		A lightweight and compact standard zoom featuring MEGA O.I.S. optical image stabilisation	•	•	30	52	60	60	195g
G 14-140mm f/3.5-5.6 POWER OIS	£599	NYT		Metal-bodied zoom featuring company's POWER O.I.S. optical image stabiliser	•	•	30	58	67	75	265g
DG 15mm f/1.7 Leica DG SUMMILUX	£549	NYT		High-speed prime with a compact metal body and includes 3 aspherical lenses to cut down distortion		•	20	46	36	57.5	115g
G 20mm f/1.7	£300	NYT		High-speed prime (40mm is the 35mm camera equivalent) with 2 aspherical lenses		•	20	46	63	25.5	100g
DG 25mm f/1.4 DG SUMMILUX	£550	2/12	5★	A fast-aperture fixed focal length standard lens from Leica		•	30	46	63	54.5	200g
G 30mm f/2.8 Macro MEGA OIS	£300	07/15	3★	Compact lens offering true-to-life magnification capability for better macro images	•	•	10	46	58.8	63.5	180g
35-100mm E f/4-5.6 MEGA OIS	£300	NYT		Telephoto zoom equivalent to 70-200mm on a 35mm camera	•	•	90	46	55.5	50	135g
G X 35-100mm f/2.8 POWER OIS	£1099	NYT		Telephoto zoom with Nano Surface Coating technology for dramatic reduction of ghosting and flare	•	•	85	58	67.4	100	360g
42.5mm f/1.2 Leica DG POWER OIS	£1399	Web	5★	Mid-telephoto high-speed LEICA DG NOCTRON lens with 2 aspherical lenses and ultra-wide aperture	•	•	50	67	74	76.8	425g
G 42.5mm f/1.7 POWER OIS	£349	NYT		Mid-telephoto lens with a 35mm equivalent of 85mm, its f/1.7 aperture promises a beautiful bokeh effect	•	•	37	31	55	50	130g
G 45-150mm f/4-5.6 MEGA OIS	£280	2/13	4★	Compact, lightweight telephoto zoom comprising 12 elements in 9 groups	•	•	90	52	62	73	200g
DG Macro 45mm f/2.8 MEGA OIS	£730	5/10	4.5★	Although maximum and minimum aperture are a tad weak, mid-range scores impress	•	•	15	46	63	62.5	225g
G X 45-175mm f/4-5.6 X PZ POWER OIS	£400	7/12	4★	A powered long focal length zoom lens	•	•	90	46	61.6	90	210g
G 45-200mm f/4-5.6 MEGA OIS	£330	7/12	4★	Superzoom lens with three ED elements and Mega O.I.S. technology	•	•	100	52	70	100	380g
G 100-300mm f/4-5.6 MEGA OIS	£550	7/11	4★	Long zoom lens offering optical image stabilization	•	•	100	52	70	100	380g

PENTAX CSC

LENS	RRP	TESTED	SCORE	SUMMARY	Image Stabilisation	Canon M	Micro 4 Thirds	Samsung NX	Sony E	Pentax Q	Nikon 1	Fujifilm X Mount	Full frame only	Min Focus (cm)	Filter Thread (mm)	Width (mm)	Length (mm)	Weight
3.8mm-5.9mm (Q System) f/3.7-4	£429	NYT		Super-compact, ultra-lightweight wide zoom, equivalent to 17.5-27mm in the 35mm format					•					25	49	38	54	75g
8.5mm (Q System) f/2.8	£129	NYT		The standard prime lens in the Q system					•					30	40.5	48.5	48	96g
6.3mm (Q System) f/7.1	£129	NYT		A wide lens for the Q system					•						N/A	40.6	25	21g
11.5mm (Q System) f/9	£49	NYT		Extremely thin Mount Shield Lens equivalent to 53mm in the 35mm format, offering a distinctive, velvety image					•					30	N/A	6.9	40.8	8g
15-45mm (Q System) f/7.1	£249	NYT		Telephoto zoom covers focal lengths between 83mm and 249mm in 35mm terms					•						40	50	56	90g
18mm (Q System) f/8	£129	NYT		A telephoto lens for the Q system					•						N/A	40.6	19.5	18g
3.2mm (Q System) f/5.6	£149	NYT		A fisheye lens for the Q system					•					90	N/A	40.6	30.5	29g
5-15mm (Q System) f/2.8	£279	NYT		A short zoom lens for the Q system					•						40.5	45.5	23	37g
15-45mm (Q System) f/2.8	£279	NYT		A telephoto lens for the Q system that's super-compact and ultra-lightweight					•					100	40.5	56	50	90g

SAMSUNG CSC

LENS	RRP	TESTED	SCORE	SUMMARY	Image Stabilisation	Canon M	Micro 4 Thirds	Samsung NX	Sony E	Pentax Q	Nikon 1	Fujifilm X Mount	Full frame only	Min Focus (cm)	Filter Thread (mm)	Width (mm)	Length (mm)	Weight
9mm f/3.5 ED	£149	NYT		At 12.5mm thin, this pancake lens is constructed of solid metal, made for the NX Mini only			•	•						11	N/A	50	12.5	31g
9-27mm f/3.5-5.6 ED OIS	£199	NYT		Versatile and compact zoom lens – NX-M mount for NX Mini only	•			•						14	40.5	50	29.5	73g
10mm f/3.5 fisheye	£399	NYT		Lightweight and compact, this versatile fisheye lens can be used with a wide range of Smart NX cameras				•						9	N/A	58.8	26.3	72g
17mm NX-M f/1.8 OIS	£160	NYT		Portrait prime lens designed with an NX-M Mount for the NX Mini	•			•						18	39	50	28	55g
12-24mm f/4-5.6 ED	£480	NYT		Portable ultra-wideangle zoom lens with i-function				•						24	58	63.5	65.5	208g
16mm NX i-Function f/2.4	£299	NYT		A pancake lens with a wide angle of view				•						18	43	61	24	90g
16-50mm f/2-2.8 Premium S ED OIS	£999	NYT		Bright-aperture zoom lens made of metal, with quiet AF performance whether shooting stills or video	•			•						30	72	81	96.5	622g
16-50mm f/3.5-5.6 Power Zoom	£279	NYT		Ultra-compact and lightweight design	•			•						24	43	64.8	31	111g
20-50mm f/3.5-5.6 ED II	£199	NYT		Ultra-compact lens with a retractable design. It's lightweight and an ideal optic for travelling				•						28	40.5	63.2	39.8	119g
18-55mm NX i-Function OIS f/3.5-5.6	£199	9/10	4.5★	Not an outstanding set of MTF curves but acceptable nevertheless. Weaker at 18mm				•						28	58	63	65	198g
18-200mm NX i-Function OIS f/3.5-6.3	£649	9/12	4.5★	A mid-range zoom lens aimed at movie making	•			•						50	67	72	105.5	549g
20mm NX i-Function f/2.8	£229	2/12	5★	Wideangle pancake lens				•						17	43	62	25	89g
30mm NX i-Function f/2	£249	9/10	4★	This pancake optic exhibits very impressive peak sharpness at around f/4-5.6				•						25	43	61	21	85g
45mm NX i-Function f/1.8	£249	NYT		Fast f/1.8 aperture produces a shallow depth of field making it ideal for portraiture				•						45	43	62	44.5	115g
45mm NX i-Function f/1.8 2D/3D	£399	NYT		Delivers high-end 3D capabilities with a large aperture and smooth autofocus system				•						50	43	62	44.5	122g
50-150mm f/2.8 S ED OIS	£1199	NYT		Premium zoom lens with advanced OIS, constant f/2.8 aperture, and dust and splash-resistant	•			•						70	72	81	154	915g
50-200mm NX i-Function ED OIS III f/4-5.6	£249	9/10	4★	Performance at the 50mm end is good, though this drops off at the tele end				•						98	52	70	100	417g
60mm NX i-Function Macro ED SSA OIS f/2.8	£499	2/12	5★	This prime lens with macro capability should be useful for portraiture	•			•						18	52	73.5	84	389g
85mm NX i-Function ED SSA OIS f/1.4	£849	4/12	5★	This prime lens is missing image stabilisation, but should still perform well				•						82	67	79	92	714g

SIGMA CSC

LENS	RRP	TESTED	SCORE	SUMMARY	Image Stabilisation	Canon M	Micro 4 Thirds	Samsung NX	Sony E	Pentax Q	Nikon 1	Fujifilm X Mount	Full frame only	Min Focus (cm)	Filter Thread (mm)	Width (mm)	Length (mm)	Weight
19mm f/2.8 DN A	£189	NYT		Metal-bodied high-performance wideangle prime lens			•	•						20	46	60.8	45.7	150g
30mm f/2.8 DN A	£189	NYT		Uses a high-quality double-sided aspherical lens for expressive performance worthy of Sigma's 'Art' line			•	•						30	46	60.8	40.5	140g
60mm f/2.8 DN A	£189	NYT		Latest addition to Sigma's 'Art' range is a mid-range, high-performance telephoto lens with metal body			•	•						50	46	60.8	55.5	190g

SONY CSC

LENS	RRP	TESTED	SCORE	SUMMARY	Image Stabilisation	Canon M	Micro 4 Thirds	Samsung NX	Sony E	Pentax Q	Nikon 1	Fujifilm X Mount	Full frame only	Min Focus (cm)	Filter Thread (mm)	Width (mm)	Length (mm)	Weight
10-18mm f/4	£750	8/13	4★	Super wideangle zoom with Super ED glass and Optical SteadyShot image stabilisation	•			•						25	62	70	63.5	225g
16mm f/2.8	£220	2/12	4★	Pancake lens for NEX system, with a circular aperture and Direct Manual Focus				•						24	49	62	22.5	67g
16-35mm f/4 ZA OSS Vario-Tessar T* FE	£1289	1/15	5★	Zeiss full frame wideangle zoom lens				•						28	72	78	98.5	518g
16-50mm f/3.5-5.6 OSS	£299	NYT		Compact lens with Power Zoom, ED glass and Optical SteadyShot image stabilisation	•			•						25	40.5	64.7	29.9	116g
16-70mm f/4 ZA OSS Vario-Tessar T*	£839	NYT		A lightweight, versatile mid-range zoom with a constant f/4 aperture				•						35	55	66.6	75	308g
18-55mm f/3.5-5.6 OSS	£270	NYT		Optical SteadyShot, said to be silent during movie capture, and a circular aperture	•			•						25	49	62	60	194g
18-105mm f/4 G OSS	£499	NYT		Sony G lens for E-mount cameras with a constant f/4 aperture				•						45	72	78	110	427g
18-200mm f/3.5-6.3 OSS LE	£489	NYT		Smaller and lighter than comparable lenses, this is an ideal high-magnification travel lens	•			•						50	62	68	98	460g
18-200mm PZ f/3.5-6.3 OSS	£999	NYT		Boasts powered zoom and image stabilisation with Active Mode, making it ideal for movies	•			•						30	67	93.2	99	649g
20mm f/2.8	£309	NYT		Pancake wideangle lens promises to be the perfect walkaround partner for E mount cameras				•						20	49	62.6	20.4	69g
24mm f/1.8 ZA Sonnar T*	£839	NYT		Top quality Carl Zeiss optic ideally suited to the NEX-7				•						16	49	63	65.6	225g
24-240mm f/3.5-6.3 OSS	£929	NYT		Ideal for travel, landscapes and more, with built-in stabilisation and also dust and moisture resistant	•			•						50	72	80.5	118.5	780g
24-70mm f/4 ZA OSS Vario-Tessar T*	£1049	NYT		Compact lens with an f/4 maximum aperture across the zoom range and built-in image stabilisation	•			•						40	67	73	94.5	426g
28mm f/2	£419	NYT		This full-frame wideangle prime with a bright f/2.0 maximum aperture promises excellent sharpness				•						29	49	64	60	200g
28-70mm f/3.5-5.6 OSS	£449	NYT		Built-in Optical SteadyShot image stabilisation, lightweight, and a popular zoom range	•			•						30	55	72.5	83	295g
28-135mm PZ f/4 G OSS	£2379	NYT		High performance G Series standard zoom lens, constant f/4 aperture, built for high quality moviemaking	•			•						95	95	162.5	105	1215g
30mm f/3.5 Macro	£219	NYT		A macro lens for the NEX Compact System Cameras				•						9	49	62	55.5	138g
35mm f/1.4 ZA Distagon T*	£1559	NYT		Full-frame ZEISS Distagon lens with large, bright f/1.4 aperture				•						30	72	73	94.5	630g
35mm f/1.8	£399	NYT		Lightweight versatile prime with Optical SteadyShot image stabilisation	•			•						30	49	62.2	45	155g
35mm f/2.8 ZA Sonnar T*	£699	NYT		When coupled with a full frame Sony E-mount camera, this prime lens promises to deliver				•						35	49	61.5	36.5	120g
50mm f/1.8	£219	NYT		A handy, low price portrait lens for the NEX range				•						39	49	62	62	202g
55mm f/1.8 ZA Sonnar T*	£849	NYT		35mm full frame prime lens with wide aperture allowing good images indoors or in low light				•						50	49	64.4	70.5	281g
55-210mm f/4.5-6.3 OSS	£289	NYT		Lightweight telephoto zoom lens for the NEX range	•			•						100	49	63.8	108	345g
70-200mm f/4 G OSS	£1359	10/14	4★	G Series telephoto zoom lens, dust and water resistant, with built-in image stabilisation	•			•						100	72	80	175	840g

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18mm f2	£399
18-135mm f3.5-5.6 OIS	£599
23mm f1.4	£869
27mm f2.8	£309
18-55mm f2.8-4.0	£519
35mm f1.4	£409
56mm f1.2	£739
60mm f2.4	£429
90mm f2	£699
55-200mm f3.5-4.8	£509
50-230mm f4.5-6.7	£309

Olympus

OMD Cameras

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E-M5 II Body	£879
E-M5 + 12-50mm	£879
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E-M10 II + 14-42mm	£649
E-M1 Body	£899
E-M1 + 12-50mm	£1249
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Lenses

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17mm f2.8	£235
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14mm f/2.8	£289
16mm f2	£329
24mm f1.4	£449
24mm T-S f/3.5	£729
35mm f1.4	£559
85mm f/1.4	£229
100mm f/2.8 Macro	£369
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16mm T2.2 CINE	£349
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85mm T1.5 CINE	£269
100mm T3.1 Macro CINE	£409
135mm T2.2 CINE	£429

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Lens Selection

10mm T2.1 (MFT)	£629
12mm T1.6 (MFT)	£429
17mm T1.6 (MFT)	£329
25mm T0.95 II (MFT)	£499
35mm T1.4 II	£329
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7 of the most expensive cameras ever made

You may have thought your 5D Mark III was a considerable investment, but people have spent much more on camera kit. Here are some of the most outrageous examples.

1 Leica Q

First up, an honourable mention has to go to the Leica Q. While it's nowhere near as costly as the other cameras on the list, at £2,900 it does hold the distinction of currently being the most expensive compact camera on the market, edging out the Sony RX1R, which originally retailed at £2,599.

HOW MUCH? £2,900, or about the same price as a used 2007 Ford Focus

2 Mamiya Leaf Credo 80 Digital back

Now we're talking. Packing a hefty 80MP of resolution to play with, the Mamiya Leaf Credo 80 uses a 53.7 x 40.3mm CCD sensor to produce images of superlative quality, which it can capture at maximum speeds of 1.2 frames per second.

HOW MUCH? £19,996, or about the same price as 13 used Canon EOS 5D Mark IIIs

3 PhaseOne XF IQ3 Digital Back

Capture 60-minute, 80-megapixel exposures with the Sensor+ in PhaseOne's obscenely pricey IQ3 digital backs. Or if you prefer, you could plump for the 50MP version and enjoy up to 14 stops of dynamic range. Either way, you're shelling out tens of thousands for the privilege.

HOW MUCH? £24,799, or the same price as 506 Hurricane disco smoke machines from Phase One DJ and Disco supplies.

4 Hasselblad Space Camera

American amateur photographer Wally Schirra, who also happened to be an astronaut, snapped this one up in 1962 – it became the first Hasselblad in space. Auctioned off last year, it was snapped up by a 'space historian'.

HOW MUCH? £178,212 (\$281,250), or about the same price as 5,942 'Spaceman' fancy dress costumes.



5 Gold-plated Leica Luxus II
How much would you pay for a one-of-a-kind gold-plated Leica camera? Your answer may have disappointed the Hong Kong auctioneers who sold it back in 2013, raising a pretty price but falling far short of their \$1.2million target.
HOW MUCH? £380,000 (\$620,000), or about the same price as 23 Leica S Typ 007s.

6 World's oldest commercial camera

The discovery of a Daguerreotype camera in a German attic led to it being auctioned off for almost \$800,000, which is as good an argument for getting around to cleaning the loft as we've ever heard. Experts deemed it was likely built before 1839, and was therefore possibly the oldest surviving commercially produced camera in the world.

HOW MUCH? £502,689 (\$792,333), or about the same price as 25,147 rolls of loft insulation.



7 Leica O-series

And finally, we have the 1923 Leica O-series model that went for literal millions back in 2012 at the 21st Westlicht Camera Auction in Vienna, smashing both the record for the most expensive camera and specialists' estimates that it would go for around \$775,000. One of only 12 that survive, the O-series camera was bought by an unnamed collector and will presumably end up in his or her loft somewhere.

HOW MUCH? About £1,767,870 (originally \$2.79 million), or about the same price as four and a half gold-plated Leica Luxus IIs. (Though their value may depreciate when they're cut in half. We haven't checked.)



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